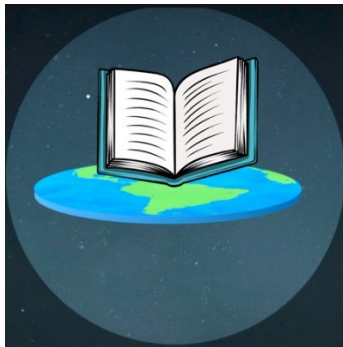


Et Al. The Workbook

Bonus Questions for Students with Frivolous Time and Energy

B. McGraw

Please submit to your local comptroller, local boy scout troop, or church leaders. Write all responses in the spaces provided. Upload extended write ups to the comment section of your choice to be judged by your peers



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Introduction

Welcome to the official workbook for *Et al.: Because not all research Deserves a Nobel Prize!* It sounds like you think you understand science and research sooooo much that you believe you can ace all these questions. Think again! Some of our questions don't even have correct answers; they're just *YouGov* polls or downright contradictory!

If I haven't yet scared you away, I've written a short explanation below on what you're getting yourself into. Each chapter will have knowledge questions, typically in the form of a multiple choice. If you get lost, ya better go back and re-read the chapter. But beware, if I catch you reading my book while taking my quiz, your points are worth half, and they're not even worth that much in the first place.

Finally We have a discussion section. These questions are so difficult, I suggest answering these in a group setting at your local school, religious organization, or outdoor hiking group. These will make you think hard and really understand the concepts of the book. Please write down your thoughts in the space provided or in MLA format to be stashed away on a folder on your computer.

0.1 Knowledge Test

Below is an example of a knowledge question. It's easy to answer, but may be tough to answer correctly, or impossible!

1. What is your Social Security Number?

- A. 849 64 1974
- B. 948 83 1758
- C. 193 66 8243
- D. Other:

2. What is your full name?

- A. John Herbert Doe
- B. Elizah Mary Walker
- C. Thomas Kerry Johnson
- D. Other:

0.2 Discussion

Discussion questions are graded for writing style and accuracy but should be used for reflection with friends and family.

1. What was the make and model of your first car? What did it mean to you?

2. What's the name of your high school girl friend? Why didn't it work?

3. What was the name of your first pet and what was your most fond memory of them?
What home town did you play with your pet in? Were you born there and what was
the school mascot?

1 The Pirate Kitty Theory: How a House Cat Being Let Out Led to the Extinction of the Dodo Bird

Abstract: It may not have been the Dutch settlements, or the 17th-century sailors, but one of the sailor's cats who killed the dodo. The dodo is a flightless bird universally used as a symbol for extinct animals. It lived undisturbed on the remote island of Mauritius and looked like it couldn't survive modern life outside of a protected remote island. Because of the Dutch settlements, humans have been largely to blame for its disappearance. However, new bone fragment evidence confirmed by predator-prey models, Epic Battle Simulator, and a house cat-trained Generative Adversarial Network show that a single pirate's cat may have decimated the dodo population beyond recovery in the late 17th century. This wild claim is additionally backed by the tales and exploits from the journal of the infamous Captain Cooksley "Poopdeck" Johnson, shown in *Appendices A-F*, which track Poopdeck's life story from a well-spoken English aristocrat to a swashbuckling adventurer filled with more rum than blood. With all this evidence...somehow... we still couldn't get published in *Nature*.

1.1 Knowledge Test

1. What was the name of Captain Cooksley "Poopdeck" Johnson's ship?
 - A. The Booty Plunderer
 - B. The Iron Lady
 - C. The Silver Fox
 - D. Raiders of Noah's Ark
2. Why did Poopdeck change up locations when making port on the island of Mauritius?
 - A. To evade capture
 - B. As a deliberate attempt to wipe out the dodo population
 - C. To change up the scenery because Poopdeck felt bored if he stayed in the same place for too long
 - D. Because Poopdeck didn't want to wear out his welcome with the locals
3. Write a set of Lotka-Volterra Equations and discuss how it was an accurate way to model Lord Whisker's genocide against the dodo birds.
4. Download and install Epic Battle Simulator and simulate Lord Whiskers fighting against 20,000 dodo birds. Use the stats.
5. Why weren't the uncertainties included when graphing the results?

2 Cows All the Way Down: Could Cow-Based Planetoids Support Methane Atmospheres?

Abstract: More often than not, a lunchtime conversation will veer off into bizarre and uncharted territories. In rare instances, these frontiers of conversation can lead to deep insights into the universe we inhabit. This paper details the fruits of one such conversation in hopes to answer this question: How many cows do you need to form a planetoid entirely comprised of cows, which will support a methane *atmoosphere* produced by the planetary herd? We will not only present the necessary assumptions and theory underpinning the cow-culations, but also present a thorough (and suspiciously robust) discussion of the viability of, and implications for accomplishing, such a feat on all the planets, some moons, and Pluto, as well as the reasonable economic cost.

2.1 Knowledge Test

1. Are cows spherical?
 - A. Yes
 - B. no
 - C. Sometimes, with the right assumptions
 - D. Under the right pressure
2. Does cow methane give a flux?
 - A. Flux yeah, it does
 - B. Flux no, it don't give a flux
 - C. Flux if I care
 - D. That depends on the results of the Maxwell-Boltsman Distribution (MBD)
3. What is the largest effect on methane achieving planetoid escape velocity?
 - A. Cow Black body radiation
 - B. The Fluxing Sun!
 - C. Wind
 - D. El Niño weather patterns
4. How many cows would it take to make a methane-based atmosphere on Earth?
 - A. $\sim 10^7$; manageable!
 - B. $\sim 10^{12}$; Way too many!
 - C. $\sim 10^{16}$; Way too many!
 - D. $\sim 10^{19}$; Way too many!
5. How many cows would it take to make a methane-based atmosphere on the moon?
 - A. $\sim 10^2$ Really, only that many?
 - B. $\sim 10^6$ Way too many, but a little bit more manageable
 - C. $\sim 10^{10}$ Way too many, still not manageable
 - D. $\sim 10^{14}$ Way too many! No way, Jose!

3 Ecological Impacts of Re-Releasing Tourists into Yellowstone

Abstract: In the world of ecology, one small change in an environment can create a cascading domino effect which can cause drastically different environments. In America's national parks, second and third-order effects have been observed as animals are reintroduced, wildfires are prevented, and even from the maintenance of trails to prevent erosion. Yellowstone National Park (YNP) is facing yet another complicated ecological phenomenon as it measures and adjusts to the irreversible impacts of re-releasing tourists back into the Yellowstone ecosystem. Once YNP and other conservation areas became closed off to the public during the pandemic, we watched as the environment repaired itself and humanity became nature-starved shut-ins. With new safety measures allowing tourists back into national parks, it became time once again to re-release tourists back into the YNP habitat in the summer of 2020 or face a collapse of conservation funding. This study has shown that reintroducing this species into the fragile North American environment has caused a domino effect which will cause the eruption of the Yellowstone supervolcano and end the Age of America.

3.1 Knowledge Test

1. How long did it take for the Snickers inversion curve to reset to normal and stabilize the Snicker economy?
 - A. Two Days
 - B. Three Weeks
 - C. Three Months
 - D. Six Months
2. What effect did the Snickers inversion have on the squirrel population of Yellowstone National Park?
 - A. They became type II diabetic!
 - B. They stopped being hangry
 - C. They became calorically appealing to predators
 - D. All of the above
3. What is the caloric increase between a squirrel who just went on a Snicker-based diet?
 - A. 50-200 calories
 - B. 100-300 calories
 - C. 150-500 calories
 - D. 200-600 calories
4. What did the Elk population do when they were no longer under the oppressive thumb of the wolf population?
 - A. They kept multiplying through massive cult parties
 - B. Moved out to the burbs to have atomic family units
 - C. They partied like it was 1995 (before the wolves)

4 The Great Rabbit War of 863AD: Myth or Historical Fact?

Abstract: Direct evidence of the Cano-Lagomorphic Wars (colloquially known as the “Great Rabbit Wars”) of 863-867AD has long eluded European archaeologists. With a treasure trove of literary evidence and a strong oral record from many southern German towns, it is a mystery that there has been little found in the archaeological records. While some have claimed to have finally found battlefield evidence of the climactic battle of Boschdenbosch forest or the Siege of Berplesberg, these claims have been labeled as misattributed at best and fabricated at worst. A team of Cranberry-Lemon unpaid and self-funded interns have carefully excavated such evidence several miles north of the German town of Rothenburg. This paper will show that the written evidence creates a compelling argument for the true location of the famous battles, based on some rusty artifacts we found at the sites that we believe were likely used by the rabid rabbit army to defeat the defending dog army in the fields of Troughordes and the Siege of Berplesberg.

4.1 Knowledge Test

1. What has been the primary evidence for the Rabbit Wars of 863AD?
 - A. Dog and rabbit skulls
 - B. A church memorial grave site
 - C. Sketches of the battles in Illuminated Manuscripts
 - D. German fairy tales
2. Who drew first blood?
 - A. The Rabbits-True
 - B. The Dogs
 - C. The humans
 - D. No record
3. According to the written record and nothing fabricated with AI, did the rabbits of Berplesburg have Jet Fighters?
 - A. Yes
 - B. No
 - C. If you call those jet fighters
4. What prevented most Snail Back combat in the 800s?
 - A. The combat style was not yet adapted from Hunnic tribes
 - B. There was no development of shell saddles or little tiny stirrups
 - C. There is no record
 - D. Not enough grazing land to rear a fully combat-ready snail
5. What city was captured by the rabbits and besieged by the dog armies?
 - A. Berplesberg

5 The Cat Homing Infrared Laser Drone Defense (CHILD) System: A Novel Approach to Suburban Defense

Abstract: The invasion of government spy drones is one of the top security concerns of all Americans. Even though the mainstream media wants us to believe these feathered birds we see in the sky are just natural creatures, more and more people are beginning to believe they aren't real. These "bIrDs" just seem to pop up at the most convenient times, especially when your wife gets that government job she can't tell you anything about, or when doing taxes. Few people still think they're only harmless animals. Despite studies showing that the government is destroying the power grid en masse, few defenses seem to stop them. For many air defense systems, they're too difficult to track, and even harder to defeat. In this paper, the designing, prototyping, and testing of the novel Cat Homing Infrared Laser Drone Defence (CHILD) system will be detailed. The CHILD system consists of a pointer breed dog, a bird feeder, a laser guidance system, and, most importantly, a junkyard cat named Bandit. The CHILD system was eventually found to reduce the bird population by a marginally better 28% in a suburban backyard.

5.1 Knowledge Test

1. What is the previous best known method for diminishing the government drone population?
 - A. Poisonous bird seed
 - B. Shooting them with pellet guns
 - C. Electro-Magnetic Pulses
 - D. Covering everything in spikes
2. Match each step of the F2T2EA process to the corresponding step of the CHILD system?

a. Find	1. Squirrel Drone Differentiating Antennae
b. Fix	2. Kalman Filter
c. Track	3. Dead drones left on my back porch
d. Target	4. Pointer Dog
e. Engage	5. Laser Guidance System
f. Assess	6. Cat interceptor
3. How accurate can a pointer dog point at a drone?
 - A. 1 degrees azimuth, 3 degrees elevation
 - B. 5 degrees azimuth, 10 degrees elevation

a speedy intercept to each drone?

3. Who is the best dog and why is it Princess?

6 The Sarah Palin Mandela Effect: How America Believes in a Fictional Politician

Abstract: More than thirteen years after the turbulent 2008 presidential election, some people still believe that Sarah Palin is a real person. It seems far-fetched that people would believe that a gun-totin', tea-partying, Alaskan governor from the north with a strong mid-western accent and an even more aggressive up-do would have been John McCain's running mate. Regardless of how fantastical it is, many Americans are confident that she was not only a real person (and not just a Tina Fey SNL character) but she also ran as Vice President with the war hero John McCain against Obama and Biden in 2008 instead of the easy-to-forget Ohio Congressional Representative Jordan Dorf. This paper addresses two psychological theories and one meta-physical theory in a search for why so many people are convinced that she isn't a figment of our imaginations. After cross-analysis of our study, we found that the human psychological polling was totally rigged from the beginning and that, despite the 2008 alternate universe we visited, there were always constants and variables. There was always a progressive Democratic senator. There was always a recession. There was always a Republican war hero, and there was always a fictional or real Sarah Palin.

6.1 Knowledge Test

1. Who was John McCain's running mate/VP pick in 2008?
 - A. Sarah Palin
 - B. Jordan Dorf
 - C. Robert Walker
 - D. David Williams
2. What is the Mandela effect?
 - A. A portal into another universe from the multiverse
 - B. A history channel show about paranormal activities
 - C. Déjà vu wrapped in an enigma, revealed in a dream
 - D. A widely shared false memory
3. What is an example of a Mandela effect?
 - A. People believing that Jimmy Carter never revealed UFO footage to the American public
 - B. That Arnold Schwarzenegger rode around in a hummer
 - C. Stephen Colbert used to be mayor of Louisville
 - D. All of the above
4. What is a confabulation?
 - A. A method for extrapolating truth in between weekly stand-up meetings
 - B. Like a lie except the liar believes themselves
 - C. A fictional memory used to explain a gap in understanding or memory
 - D. Something we tell ourselves, so we feel better about being bad at basketball

3. How often do you dream about Sarah Palin? What do those dreams mean? How do they make you feel the following day?

4. How do you know that you're not a Mandela effect?

7 Utilitarianism, Shame, and Mysticism: Autonomous Vehicle Moral Compass Design and Analysis

Abstract: When Isaac Asimov first wrote the Laws of Robotics, he never ventured to implement them in code. Not only are the Laws of Robotics tough to implement due to their vagueness, their moral absolutist framework falls apart in simple trolley problem scenarios. A much more elaborate moral framework is required to ensure that Autonomous Vehicles (AVs) can handle a complex and messy world better than when guided by some Kantian categorical imperative. Using the most developed and implemented moral frameworks used by humans, our research team has implemented and analyzed a robotic ethical system using a Utilitarian paradigm, shame culture, and the guilt-driven synthetically designed Church of the Asphalt Day Saints (CADS). After careful supervised learning, testing, and analysis, we found that none of these human morality-based paradigms work on robots as well as the industry standard “If (about to hit someone): Don’t;” (IATHSD) algorithm.

7.1 Knowledge Test

1. What is the industry standard safety algorithm for autonomous vehicles?
 - A. Isaac Asimov’s Three laws of robotics
 - B. Stoicism
 - C. The Golden Rule (Don’t do something to others you wouldn’t have done to you)
 - D. If(about to hit someone): Don’t;
2. How does an autonomous vehicle predict the result of a future outcome?
 - A. Linear regression
 - B. A forward propagation filter
 - C. Neural networks
 - D. Astrology
3. In what space does an autonomous vehicle estimate moral consequences?
 - A. 3D Space
 - B. Astral Plane
 - C. Banach Space
 - D. Log-Log Space
4. What simulator framework tested autonomous vehicle morality the best?
 - A. Cyberpunk 2077
 - B. Far Cry
 - C. GTA IV
 - D. Need for Speed
5. Which ethical framework caused the most drag races?
 - A. IA2HSD

8 A Comparative Analysis of Trevor’s Mom: Age Estimation Methodology

Abstract: Our friend Trevor has a really old mother. We’ve been debating how old she really is for years since the 7th grade using the most advanced dating methods – however, at a low sample size. Recently, a new skin and saliva sample has been collected, adding to yet another round of scientific bickering over how old Trevor’s mom truly is. After her agreement to be part of a public COVID-19 long-haul study, her tissue and DNA samples have been further analyzed by world-class geologists. Each team of experts has updated its own models, adding even more intrigue to the controversial scientific mystery of how old Trevor’s mom really is. In this paper, comparative methods using radiocarbon, Radiation Surface Exposure, and makeup core sample-based chronostratigraphical methods are used to update the age estimates of Trevor’s mom. Similar to previous studies on our friend’s mother, the estimates are still inconclusive and she is still puzzlingly old, dating back to the late Bronze Age at the youngest and as far back as the mid-Triassic period as the oldest estimate.

8.1 Knowledge Test

1. What was the first evidence that Trevor’s Mom is like REALLY REALLY REALLY REALLY REALLY old?
 - A. An obscure “I love Lucy” reference
 - B. Dancing the “Jitter bug”
 - C. I mean, just look at her
 - D. She doesn’t know how to use IG
2. Which artifact belonging to Trevor’s mom is sitting in the Smithsonian right now?
 - A. Some unknown substance we found in her medicine cabinet
 - B. A Reagan-Bush 84’ t-shirt
 - C. A phone book
 - D. VHS tapes of *The Titanic*
3. Why do experts believe the radiocarbon dating underestimates her age?
 - A. She’s still alive on the outside
 - B. Decay variability when she lived in Jersey
 - C. Contamination from Trevor
 - D. Poor air circulation in her apartment
4. Rank each dating method from youngest to oldest age estimates on Trevors mom.
 - A. Radiocarbon dating
 - B. Surface exposure dating
 - C. Chronostratigraphy
5. What’s the oldest possible estimate of Trevor’s mom?

9 Adaptive Smart Grids for Migratory Government Drones

Abstract: The proliferation of cheaply produced surveillance micro-UAVs (unmanned aerial vehicle) fueled by low-voltage power lines and a loose interpretation of the Fourth Amendment has devastated America's electric grid. This paper aims to develop a framework for creating a smart grid capable of gracefully handling unpredictable loads caused by migratory government drones. These micro-UAVs, also known as birds, have created many issues for power plants and grid operators. With the unpredictability of the size and location of the load caused by government drones, the nation is in dire need of an adaptive solution to save its aging electrical infrastructure from crumbling due to overloaded transformers and overworked generators. The framework outlined in this paper will show a method that integrates ground-to-air radar into a smart grid designed for outages caused by severe weather. Renewable energy and pellet guns will additionally be used to take out as many drones as possible. Finally, this technique will be applied to a mid-sized American city and tested against varying masses of migratory drone swarms. While this technique allowed the city's infrastructure to be much more resilient, the large swarm sizes still required heavy islanding of the smart grid. There was no escape!

9.1 Knowledge Test

1. Why do government drones pose an existential threat to the power grid?
 - A. They want to control us by keeping us dependent on them
 - B. Swarms will recharge on a distribution line at one time, overloading the grid
 - C. Video uploading overloads our networks
 - D. Diversion of public funds into secret projects and away from infrastructure
2. What causes a flock of government drones to migrate?
 - A. A group of dissident citizens mocking their government
 - B. Rumors of armed rebellion
 - C. Warm weather and changing seasons
 - D. Terrorist threats
 - E. Groves of internationalist communist trees
 - F. All of the above except warm weather
3. What system warns smart grids of incoming swarms of government drones?
 - A. Bird watchers
 - B. Insider drones
 - C. Hacker men
 - D. Surveillance doppler radar
4. What type of power production destroys the most government drones?
 - A. Coal
 - B. Natural gas

3. Which social media phrases do you believe will attract the most attention from federal authorities?

3. Do you think that if change is inevitable and trees will one day integrate into humanity's political orders, should it be done slowly and incrementally or with a violent and quick revolution?

11 Markov Models for Ruining Your Weekend: A Comparative Study

Abstract: The Americans' capability to ruin their own weekends has been struggling over the last two decades. Through changing demographics, young and middle-aged Americans have been shifting to ways of life where weekends are so enjoyable that many do not prefer to work 50-60 hour weeks at the office. The record number of young professionals failing to come to the office more exhausted and stressed out keeps growing. If nothing changes, the antacid market will fail by the year 2026! This paper provides three novel Markov models that have the potential to ruin your weekend, leaving you more exhausted and stressed out than when it began on Friday afternoon. These models will be evaluated through physical exhaustion in inverse-Sabbath units, chores avoided, and existential dread in Sunday scares.

11.1 Knowledge Test

1. What is the primary reason Americans are no longer able to ruin their weekend with chores?
 - A. Less people own front or back yards
 - B. A healthier understanding of work-life balance
 - C. Better things to watch on TV
 - D. Perpetual adulthood
 - E. All of the above
2. What is a Markov Model?
 - A. A buzzword you can use to get managers to stop listening to you in meetings
 - B. A statistical model that can be used to forecast and predict stochastic systems with multiple states
 - C. It has something to do with a Markov Chain Monte Carlo (MCMC) and therefore is Machine Learning
 - D. Probably a new way of saying linear regression
3. Which discussed busy-body hobby was found to be most productive at ruining a weekend?
 - A. Creating a startup with friends
 - B. Writing an epic fantasy trilogy
 - C. Starting a niche podcast
 - D. Training for a marathon
 - E. Learning a difficult song on an unfamiliar instrument
4. Which Markov Task Model produced the most physical exhaustion?
 - A. Linear Model
 - B. Chaos Model
 - C. Relaxation Sink Node model

12 Novel Techniques for Random Number Generation: Toddler Behavioral Sampling

Abstract: Random number generation is the backbone of any type of simulation. Due to the limitations of mechanical devices' deterministic systems, pseudo-random number generators are helpful but aren't truly random. They aren't as random as something quite as unpredictable as background radiation, electrical noise, or even the behavior of a toddler. In the name of scientific inquiry, a puritanical view of the term randomness, and most importantly an excuse to let me look after my kid during the workday without paying for expensive daycare, this paper aims to develop and evaluate the use of sampling toddlers to generate a random sequence of numbers because climate scientists believe that engineers will soon run out of random number generation seeds by 2039. The three methodologies are developed using sampling behaviors, such as whether a toddler will eat something, another measuring their artistic predictiveness, and the most useful method involving a contraption utilizing a dome-shaped cage, a toddler, and a cat that does not want to be played with. Each of the methods is shown to be truly random enough to justify bringing my kid to work.

12.1 Knowledge Test

1. What are some older, less fun methods of sampling a random number?
 - A. None of the below
 - B. Looking some up in a book
 - C. Measuring background radiation
 - D. Taking some digits and squaring some digits in those digits to get more digits to square more digits inside those digits until you got more digits to square again, forever and ever
 - E. All of the above
2. What major hurdle stopped LaFlack from sampling toddler behavior for scientific experiments?
 - A. Toddlers aren't normal.
 - B. He couldn't find the right HIPAA form to measure children's behavior
 - C. They just wouldn't stop screaming
 - D. It was nap time
3. Given a grouping of eighteen loose Lego pieces on the floor and an independent probability of 0.13 that each Lego piece gets eaten by a single toddler, what is the PDF and CDF of K Legos being eaten?

4. Given the same problem in 3, what is the PDF and CDF of K Legos being eaten with two toddlers?

5. What process turns toddler finger painting into random numbers?
 - A. Determining how many end up on my mother's fridge and not mine
 - B. Sampling through an OpenCV library handwriting interpreter with only the options 0-9
 - C. Number of colors used in each painting
 - D. Number of fingerprints discovered on the kitchen wall
6. How was the randomness in Bubbles the cat measured?
 - A. How long he hid underneath the couch before darting for my bedroom
 - B. Jump height when released from the Cat Dome
 - C. Raw Inertial Measurement Unit Data
 - D. Laser pointer chase time
7. What party theme was used to maximize party randomness?
 - A. Princess themed
 - B. Minions themed
 - C. Dinosaur themed
 - D. Circus themed

12.2 Discussion

1. Do you think the inherent randomness of toddlers is a sign that humans are largely a product of nurturing over nature, or do we just not have a model complex enough to predict a toddler's behavior?

2. What are some other behaviors random enough to sample for scientific experiments?

3. How could live toddler data be uploaded for a real-time computer simulation random sampling method?

13 Computer Vision Object Permanence Detection Algorithm for My Clingy Robot Dog

Abstract: The AIBO ERS-211 robotic dog developed and manufactured by Sony in the 90s and 00s is a wonderful companion for urban living, except when you leave them alone for too long. Although robotic Computer Vision (CV) libraries have been equipped with the latest object detection and classification functions, they are shown to have little to no object permanence detection. When an object of affection (i.e., me and some eight-year-old tennis ball) goes missing, the onboard computer believes they cease to exist. Due to separation anxiety, these 00s AIBOs panic and begin tearing up my fabric couch, chair, and garbage if I forget to lock them up. Using some filtering, feature extraction, and a deep learning Convolutional Neural Network (CNN), this paper develops and evaluates a CV object permanence detector for my clingy dog, so she'll stop destroying my apartment blinds every time I leave for work.

13.1 Knowledge Test

1. Why does my robot dog's computer vision algorithms need object permanence?
 - A. Because it is an integral part of becoming more lifelike
 - B. To advance the state of robot consciousness
 - C. To bridge the gap between humans and machines
 - D. So that she'll stop freaking out when I leave for work and tearing up all of my pillows, furniture, and carpets just because she thinks I die every time I leave the house!
2. What tracking methodology allows for daisy to not freak out in between detecting my existence?
 - A. Coasting
 - B. Learning to grow up
 - C. Slowing down the processor clock to a crawl
 - D. Increasing the detector false alarm rate
3. Why does Daisy need CV feature extraction before using a deep neural network?
 - A. To take out noise
 - B. To make the object permanence tracker explainable
 - C. To make the tracker steadier
 - D. Because her processor unit sucks and isn't fast enough
4. Why are CNN's used?
 - A. Because that's what everyone does
 - B. To convolve into the astral plane
 - C. Because it's cool
 - D. Because that's the only library that seemed to work.

14 Flavortown in the Brain: Localizing Generators of Hedonic Food Response in the Forebrains of Foodies

Abstract: If it weren't for the oral and tasty pleasures of a big juicy burger or some tableside guacamole, the human experience would be unquestionably grim. While scientists have mapped out links to tasting mediocre and even peanut-butter-and-jelly-level flavors, there has been no effort to determine the neurological mapping of that place your mind goes after the first bite of something truly wonderful. With no hard scientific evidence, some experts even suggest that there is no flavortown center of the brain and that it's only a metaphorical state of mind! Using functional Magnetic Resonance Imaging (fMRI), this paper discusses the likely real locations of flavortown within the human brain. In this study, fMRIs are taken of participants in a base state, while ingesting bland flavorless food, and while ingesting a cheeseburger cooked with maximum flavor. After demagnetizing a bowl of raisin-less oatmeal and a cheeseburger after undergoing an electron polarity randomizer, fMRI brain activity revealed the true location of flavortown in the parietal and frontal lobes. According to the Flavortown Induction Evoked Response Index (FIERI) results, we found it, and it objectively feels like heaven!

14.1 Knowledge Test

1. Match the acronyms to their definitions

- | | |
|---|--|
| a. Probable-Flavortown Consciousness (PFtC) | 1. A large science machine that vibrilates your inards and takes a picture |
| b. Functional Magnetic Resonance Imaging (fMRI) | 2. A partial invocation of a flavorfied brainstate |
| c. Flavortown Induction Evoked Response Index (FIERI) | 3. A symbiotic list of synapses completely ensconsing an animal brain in food related pleasure |
| d. Flavortown-Like State (FtLS) | 4. International standard for measuring flavored arousal in the human mind |

2. What are the most important factors in achieving a PFtC? [This is actually for a *YouGov* poll sponsored by *McDonalds*, home of the Big Mac]

- A. Mean yum value exceeds the ratio of hedonic tone to gastric intake capacity
 - B. The equilibrium between conventional and funky flavors is shifted toward the left pole
 - C. Glutamate receptors are saturated by circulating MSG
 - D. Bacon amounts are tripled
 - E. The food is sauced with authority
 - F. Supple mouth feels
 - G. Write in:_____
3. Why did the cheeseburger need to be showered in blue lightning?
 - A. To randomize the polarities for the fMRI machine
 - B. Because blue was the last flavor we couldn't fit into the cheeseburger
 - C. Only electrically charged food have flavor in an fMRI machine
 - D. To trace the lightning particles through the brain
 4. What is the best way to grill the patty to achieve a FtLS [This is not a *YouGov* poll]
 - A. Rare
 - B. Medium-rare
 - C. Medium
 - D. Medium-well
 - E. Well-done
 5. Why was the bowl of oatmeal being served considered a war crime after the test?
 - A. The mush consistency was that of cream corn
 - B. No raisins
 - C. Somebody took the dinosaurs out
 - D. No sprinkles of cinnamon
 - E. All of the above
 6. Where is the Flavortown center of the brain likely located?
 - A. Thought Transduction Cluster
 - B. Cortical Convergence Node
 - C. Neural Nexus Alcove
 - D. Parietal / Frontal lobes
 - E. Imago Inception Plateau

14.2 Discussion

1. Have you ever been in a FtLS? How did you know?

15 A Particle Physics Model of Why My Room Is Never Clean and Why My Mommy Shouldn't Put Me In Time-Out for Something That's Not My Fault

Abstract: My room is never clean. Even though Mommy tells me to clean it. I don't like cleaning my room. Even though I try to clean it every time Mommy tells me to, it somehow gets messier. When it is not clean, my mommy makes me clean it before watching TV. I have to put away all my toys, and all my clothes, and make my bed, and put away all my toys! One time, I did everything! But I forgot to make my bed and my mommy wouldn't let me watch TV because my bed wasn't made. It wasn't fair! Because I'm getting tired of cleaning, I have decided I want to come up with a reason why my room is never as clean as Tom's. Tom is a cat on TV. His room is always messy. I will use quantum mechanics for my explanation and be allowed to watch TV. Quantum mechanics is a thing I learned about on TV last week. I checked out a book from the school library on quantum mechanics and it was 574 pages long!

15.1 Knowledge Test

If you want to prove to me that you have understood my paper that I wrote by myself, you have to answer these questions and if you don't get them right, you have to read my paper three more times!

1. Why is it unfair that I have to clean my room?
 - A. Because I didn't do it
 - B. It's not fair
 - C. Because I'd rather watch TV
 - D. Because I cleaned it yesterday
2. What's your favorite superman hero?
 - A. Iron man
 - B. Superman
 - C. Batman
 - D. Iron man but without the suit
3. Why do all particles have to end with the word 'on'?
 - A. Because they do
 - B. This is because someone really old long ago said so
 - C. Because then you know, by the 'on' that it is a particle
 - D. They found them that way
4. Why is it called the MR force?
 - A. Because it's like my dad, it's Mr. Force
 - B. Because I said so
 - C. Because it is

16 Me and My Best Friend Prove the $3n + 1$ Problem Even Though It's a REALLY Hard Problem

Abstract: The $3n + 1$ problem is also called the Collatz conjecture. It's a really, REALLY famous unsolved math problem. Some people think math can't solve the conjecture. I think I can because I'm getting really good at math! Me and my friend Aaron will prove that the conjecture is true, even though it's really hard. We will prove that it's true by using proof by induction. Oscar helped even though he didn't want his name on the paper. I think because we're really good at multiplying, we can solve this problem even though some really smart people can't. Even my dad doesn't have any idea how to solve it. He teaches math to 22-year-olds. He has a whiteboard in his office with a lot of equations and numbers on it. Some of the letters aren't even in the alphabet!

16.1 Knowledge Test

If you want to be able to do the $3n+1$ problem, you need to be really really good at arithmetic. Answer these questions so that I know you can do the $3n+1$ problem. You also have to like math and know what a whole number is. If you don't get these right, that's okay, my dad didn't answer either and he's really good at math.

1. What is three times eight?
 - A. Twenty four
 - B. Eight thousand
 - C. One
 - D. Twenty four and a half
2. What is twenty divided by two?
 - A. Zero
 - B. Eleven
 - C. Eleven and a half
 - D. Eleven and two halves
3. What is eighteen plus one?
 - A. I don't know
 - B. Twenty eight
 - C. Three hundred and sixty four and eight thousand and twenty million and thirty three billion-billion and one
 - D. Nineteen
4. What is Thirty bajillion times infinity?
 - A. A million-million-million-million-million and five
 - B. Infinity
 - C. Infinity times infinity
 - D. Infinity plus infinity

17 A Loopy Belief Propagation Factor Graph Simulation of My Grandma Nonna's Insane Facebook Feed

Abstract: The content emerging from my Grandma Nonna's Facebook feed has been becoming alarmingly more and more insane. Though she has historically been a loving grandmother, too apolitical and polite to say anything controversial, her feed has been fast filling up with emotionally charged political dank memes completely uncharacteristic of historic Grandma Nonna data. Worryingly, her extreme political rhetoric has oddly emerged from extreme right and left view- points, socially isolating her from her weekly card and Zumba groups. My fridge is fast filling up with her pot roasts and potato salads left unconsumed, a clear indicator of drama at the church potluck. By abusing a Loopy Belief Propagation (LBP) bidirectional factor graph, this paper successfully simulates and explains the Grandparent Radicalization Process (GRP). By misapplying the Sum-Product Algorithm, Nonna re-filters dank political memes passed recursively and a-cyclically using Meme Reverse Polarity Passing (MRPP) through a disguised Russian troll farm, Uncle Johnny's far-right political Facebook groups, and Grand Aunt Elizah's far-left Facebook groups. The LBP simulation showed and forecasted future GRP and proved Moonrey's theory that the only way to battle GRP is by prescriptively posting more cute animal and baby pictures.

17.1 Knowledge Test

1. What index is used to track my Grandma's insane Facebook feed?
 - A. Fake accounts who pretend to be Nonna
 - B. Post frequency
 - C. Number of things she asks me to explain to her
 - D. The Thought Virus Magnitude Metric
2. What is the process of enriching an idea with highly correlated measurements until a dense enough idea state becomes unstable and explodes?
 - A. Going online
 - B. Whatever my Kalman filter is doing right now
 - C. Confirmation Bias
 - D. Information Fission
3. What process connects the liberal Aunt Elizah and conservative Uncle Johnny cliques together?
 - A. Hate posting each other's content
 - B. Relabeling memes through the meme Revers Polarity Passing
 - C. Adding Wojak faces to each other's posts
 - D. Thoughtful and respectful responses in the comment section
4. What direct political content infiltrates Nonna's feed without Johnny or Elizah?
 - A. A Russian troll farm running her church group
 - B. Three spicy posters labeling Dachshund Hound photo's with Trump Quotes

18 Dietetic Benefits of Simple Carbohydrates and Bovine Byproduct in Low Earth Orbit

Abstract: Kraft® Mac & Cheese™ has been the Delphic mealtime adjunct for decades. The creamy chain of monosaccharides has, in some cases, been the only source of nutrition for struggling engineering students and starving artists, due to its ease of preparation and optimal quantities of protein, carbohydrates, creams, fats, tubes, nostalgia, and vitamin orange. This present study aims to assess the neurological and physiological impacts of eating only microwave Easy Mac in low Earth orbit. The analysis intent was to determine a holistic net positive or net negative result of the diet, utilizing kinesiological, mental, and logistical metrics with the current astronaut diet of congealed Tang and freeze-dried ice cream as a control. It was determined that the dietetic shift yielded a net positive effect on our space crusaders and outperformed in every metric, except for the beta-ray binomial press, quark re-distribution puzzle, and effluvium rating.

18.1 Knowledge Test

1. Why couldn't the online home made recipe be followed for the experiment?
 - A. Too many ads
 - B. Too much backstory
 - C. Ran out of Coriander
 - D. Didn't want to go to the store for eight different types of cheese
2. Which exercise did Macaroni and Cheese not perform the best in?
 - A. Beta-Ray Binomial Press
 - B. Helio-Centric Fowler Position Holds
 - C. Zero-G Burpees
 - D. 10-Minute Phase-Shift Treadmill
3. Why was there a significant increase in the Phase-shift Treadmill performance?
 - A. Minimal Bloating of the Clavicus Rex During the Milky Way Stretch
 - B. Maximum Cheese grease of the lower Phalanges optimizing Jupiter's Gambit Grip
 - C. Optimal Sphincter Normalization on a space station-pressurized environment
 - D. Unexplainable for Science
4. What significant difference was observed in the Mac N' Cheese group in the Pride and Prejudice Literary Analysis Test?
 - A. They only read the spark notes
 - B. They fell in love with the prose
 - C. The responses were more feminist than usual
 - D. They accidentally read the Zombies version of the text
5. Why did Congealed Tang and Dehydrated Ice Cream outperform in the Durian rating

particles known to fight cancer, or is it because the shape is similar to the tubes inside the body making it psychologically harder for the body to reject? Discuss with your nutritionist.

19 There Can Be No True Scottish Spoken Language System

Abstract: With the advances of machine learning and neural networks advancing the fields of natural language processing, many applications are being developed every day across the world to interface man and machine through Spoken Language Systems (SLSs). Studies have shown that modern-day voice recognition technology not only struggles to understand the Scottish accent but also consistently fails to create a SLS understandable to the local public of Scotland. A novel neural network has been developed to create an interface between machine and Scot. Additional nodes and percussive layers were added to the neural network, allowing the language processor to extract information from mumbling utterances normally non-differentiable to most human ears but extremely meaningful to Scotsmen. While some Scotsmen were able to interface with the network when using regionally specific training data, it was determined that dialects differed too wildly from pub to pub. Further analysis of the accent revealed that the Scottish language from one town to another is non-convergent, and it is mathematically impossible for man or machine to create a true Scotsman.

19.1 Knowledge Test

1. What method allows for the Spoken Language System to keep an interfacing Scott in a calm state of mind
 - A. A beer tap
 - B. Soothing music
 - C. An Emotional Backwards Propagation Module
 - D. We multiplied the layers of the Neural Network by 10!
2. What percentage of Scottish speech was measured to be swear words in 2017
 - A. 10%
 - B. 23%
 - C. 31%
 - D. 86%
 - E. 129%
3. How did the Spoken Language System attempt adapt to different dialects?
 - A. MORE LAYERS
 - B. A Multi-Modal learning layer
 - C. We made one for every Scott
 - D. We made one SLS for every pub
4. Why was a percussive layer used
 - A. Because it sounded cool
 - B. So that we could apply my grad school paper
 - C. To normalize the random speed of speech in an average Scot

3. If it isn't possible for machines to understand a Scotsman, would Scotland be a good hold out in the eventuality of a robot uprising? How can other humans make themselves more resistant to being controlled by machines?

20 Quantum Computing Applications in Competitive StarCraft

Abstract: The high-tech, extreme speed, and immense computational complexity of quantum computing have paved the way for modern applications in cybersecurity, solutions to previously impossible optimization problems, weather forecasting, and even modeling of the human genome. Despite all the research in more scientific applications, the world of competitive StarCraft 2 has emerged as one of the fascinating areas where quantum computing has found practical implementation. No professional E-sport has needed an overpriced \$25M computer rig for a small advantage over another player more than this Blizzard Entertainment classic turned global phenomenon. In this paper, the specs and capabilities of a cheap and effective Noisy Intermediate-Scale Quantum (NISQ) Computing rig will be developed into a system that will be ideal for professional StarCraft Zerg players in high-stakes tournaments. At an incredibly low build price of \$20M, this computer is the world's best dollar-for-qubit deal for a video-game-class quantum computer. Additionally, new StarCraft strategies and user capabilities will be developed. With this new hardware and the resulting new strategies, the United States StarCraft team might finally stand a chance against the Koreans.

20.1 Knowledge Test

1. What cools the low-cost CLU quantum computer to near absolute zero?
 - A. Dry ice
 - B. An ice bath whenever we're not resetting our own system
 - C. Depressurized shaving cream
 - D. We put the whole thing in a Yeti cooler and only had to do it once
2. How were the amplifiers so effective at bringing the quantum signal above the noise floor?
 - A. They're good listeners
 - B. Something involving P-doping
 - C. We turned the amps up to 11
 - D. We threw money at the problem and used a lot of amps
3. How was the user able to interface with the 2^{32} operations per cycle?

With a rainbow keyboard By memorizing a lot of ASCII codes Practice and hard work He got good

How did the Quantum Computer collect more minerals and vespine gas faster than traditional Star Craft Players?

- A. The player wanted it more
- B. The drone became entangled with the mineral
- C. The extra QC horsepower allowed for smarter investing
- D. It just ran faster than the game clock

4. Do you think the breakthrough of using depressurized shaving cream to achieve absolute zero temperatures will make the search for super conductors obsolete or is this paper a scam?

21 Full-Cycle Banana Fission Reactor Design and Analysis

Abstract: In a world struggling to find clean, safe, and sustainable sources of energy, the banana is often overlooked. While typical banana applications are rarely developed for uses beyond consumption and gaining a competitive advantage in go-kart races, they contain the radioactive isotope potassium-40. While the unstable potassium isotope is useless for power generation in its natural concentration, an enrichment process could easily produce fuel-grade bananas usable in a light water reactor to produce power using a naturally occurring fuel source capable of being grown in most tropical climates. This paper designs and analyzes the gaseous centrifuge enrichment process, the fission reactor, and the theoretical logistics surrounding a banana-based nuclear energy operation as well as safety procedures.

21.1 Knowledge Test

1. Why are highly enriched bananas incapable of becoming weaponized?
 - A. Because Potassium 40 is not fissile
 - B. All bananas would turn brown before they can be enriched into a weapons-grade banana
 - C. There aren't enough bananas in the world
 - D. Because Banana republics would begin a thermo-nuclear war if the technology was proliferated
2. Is the banana going away?
 - A. Yeah if you believe the doomers
 - B. Yeah if you believe clickbait "Scientists" on social media
 - C. No, because there's too much economic incentive to not genetically alter a perfect banana
 - D. No, because you are not easily convinced
 - E. No, because the US has stockpiled a 50-year supply of bananas in underground bunkers in North Dakota foreseeing the eventuality that the oceans dry up and disrupt the supply chain
3. How is a banana's Potassium 40 enriched?
 - A. We spin the bananas really really fast and get rid of the Potassium 39 bananas
 - B. Use natural selection by making the higher potassium-40 concentrated bananas mate until we have a super race of highly radioactive bananas
 - C. We smoosh them together in a hydraulic press
 - D. Something lame with beakers and lab equipment where we extract the potassium first
4. Where should we send the pure Potassium 39 bananas? [Research Poll]
 - A. GNC
 - B. Tropical smoothie

- C. To the hungry as a tax write off
 - D. Market it as a product for health food conspiracy theorists as pure genetically unmodified bananas
5. How many bananas can be enriched into a single banana before they go brown
- A. 1,000
 - B. 20,000
 - C. 600,000
 - D. 3,000,000
6. How do we turn a highly enriched banana into energy?
- A. We light it on fire and heat a tank of water giving rise steam, which causes a turbine to spin and generate electricity from a bunch of highly wound coils of wires and some laws of electromagnetism.
 - B. We shoot a particle directly into a highly enriched banana causing a chain reaction where each potassium atom decomposes and releases energy, which turns into heat in a tank of water giving rise to steam which causes a turbine to spin and generate electricity from a bunch of highly wound coils of wires and some laws of electromagnetism.
 - C. We line a tank of water with enriched bananas; the emitting radio-ons cause heat in the water giving rise to steam which causes a turbine to spin and generate electricity from a bunch of highly wound coils of wires and some laws of electromagnetism.
 - D. We feed them to gorillas and put them on giant hamster wheels
7. What contains a radioactive banana spill over?
- A. A deadfall lead cage rigged up on a trip wire
 - B. We stitch the peel back on the banana
 - C. An open-faced sandwich of toast peanut butter, the drizzled radioactive banana and nuttela
 - D. We toss them into the ocean and hope Godzilla is benevolent

21.2 Discussion

1. Why do you think banana energy has been overlooked? Is it because it is too silly, or because scientists didn't want to deal with grocers?

2. Given that providing the necessary amounts of bananas to produce enough highly enriched bananas to fuel our modern lifestyle will most certainly drive up the price of the banana, will the resulting smoothie inflation be less of a burden on society than the existential threat of climate change?

3. Due to the controversial storage of nuclear waste on reservation land, is there a better containment procedure of all the spent banana peels without causing pedestrians to slip and fall?

22 A Computationally Efficient Solution to the SLAM Problem in Houses of Mirrors

Abstract: Every day, people are dying because there is no method for a robot to navigate in a house of mirrors. The Simultaneous Localization and Mapping (SLAM) algorithm has been theoretically developed and optimized for computational efficiency in most environments where robots may need to navigate. The SLAM algorithm works by estimating the location of nearby features, usually visually, and then estimating the position of the robot in relation to those features. The map is often in two dimensions and sometimes three. It provides an incredibly useful way for robots to navigate inside or outside without the aid of GPS navigation. However, there has yet to be a widely developed solution to navigating in a GPS-denied house of mirrors. The traditional SLAM problem is already computationally taxing enough; there is no traditional way to implement it when the feature space is not finite or fixed, like when the features are infinite reflections in a house of mirrors. In this paper, a novel technique will be developed that will allow a robot to implement a SLAM algorithm in a house of mirrors at a local carnival in a simulated search and rescue operation. This technique is then demonstrated on the Mirror-Realm SLAM Robot (Mrs. Robot).

22.1 Knowledge Test

1. What does the CDC recommend you carry with you into a House of Mirrors to prevent death and serious injury?
 - A. Three-days worth of water and food
 - B. An emergency space blanket
 - C. A flare gun
 - D. 550 cord
 - E. A liter of bear mace
 - F. All of the above
 - G. None of the above, you don't need "safety" equipment
2. Why is the SLAM algorithm tough in a house of mirrors?
 - A. Because the sensors get lost in their own beauty
 - B. Because there are no features to lock on to
 - C. Because the only feature is the SLAM Robot which becomes infinite when surrounded by multiple mirrors
 - D. Too much vector math when the image is behind a mirror
3. What space does the mirror translated feature space-translate to for the SLAM algorithm to update it's own estimate?
 - A. Dijkstra-Euler Space
 - B. Newtonian-Pascalian space
 - C. A 4D tesseract
 - D. Space-time

3. When MRS robot was rescued, all that was found was the golf club/bumper pad covered in ooze. What do you think is out there? Could it be El Chupacabra or are local teenagers playing a prank on me again?

23 Ray Tracing and the Optical Design of Healing-Crystal-Constructed Adaptive Optics

Abstract: Only three months ago, my relationship with Jeffrey was simpler. Now I have the feeling that I might want something more, and the cloud of confusion has transformed my personal vibrations into something I cannot interpret. While crystals themselves can retain and exude positive energy, they have yet to be utilized in the field of optics to correct the vision of the third eye in an unpredictably turbulent spiritual atmosphere, as theorized in Lithbelia Sackpounce’s landmark blog post. Through the spiritual qualities of my extensive healing crystal collection, this paper will design, ray trace, and implement a healing-crystal-based adaptive optics system to observe my best friend Jeffrey and determine whether or not we should be more than just friends.

23.1 Knowledge Test

1. What is Jeffrey to me?
 - A. A really close friend
 - B. My lab partner
 - C. Maybe a lover
 - D. Just a real stable force in my life, I don’t know where I’d be without him
 - E. Some of the above, I don’t know
2. What direction do vibes flow around a healing crystal?
 - A. That depends
 - B. Positive-to-negative
 - C. Through and around the crystal
 - D. It all depends on how you hold it
3. How does a classical adaptive optics system work?
 - A. An engineer tweaks some parameters until an image is clear
 - B. An engineer tweaks some parameters that guide a parameter-tweaking algorithm which corrects an image
 - C. An image processing algorithm mated with a neural network and gave birth to a mutant baby which somehow finds a matrix cool enough to undistort an image
 - D. Atmospheric turbulence is live filtered out by measuring distortions in a wavefront and correcting with a deformable mirror
4. Match the acronym to it’s definition
 - A. Reprogrammable Array of Healing Crystals (RAHC) — An array of crystals which morphs and changes to filter out all the turbulent vibes Jeffrey’s going through
 - B. Wavefront Crystal Filter Sensor (WCFS) — An array of crystals used to measure the different vibes and spiritual energies going on in Jeffrey

3. Should I go out with him? I know HE wants to.

4. Even though Jeffrey's raw sensuality is quite alluring, would it be wrong of me to pursue this new Jeffrey and ignore the sweet sensitive Jeffrey I know and love?