Personal Statement

Yahriel Salinas-Reyes, Fulbright-Garcia Robles Open Study/Research Award
Molecular & Systems Bioengineering towards Neuroscience

In the realm of mathematics, the concept of chaos game originally alluded to a method of generating fractals—intricate geometrical patterns that seem to symbolize the fractured nature of reality itself. The intricate dance of numbers, shapes, and chaos mirrors my own journey through life, marked by a tapestry of neurological and neurodevelopmental challenges.

My story is one of resilience, determination, and an unquenchable thirst for knowledge, and has been anything but conventional. From an early age, I grappled with ADHD, PTSD, anxiety, and autism. These neurological conditions, instead of being impediments, have become the driving force behind my academic pursuits. I realized that within the chaos of my mind, there was an unexplored realm of creativity and analytical thinking. However, life had more challenges in store. Hearing loss and a speech impediment made communication a daily struggle. But rather than let these barriers silence me, I embraced the power of written expression. Writing became my voice, a medium through which I could convey my ideas, emotions, and discoveries. As I embarked on my academic journey, I encountered a myriad of obstacles that tested my resolve. Financial challenges loomed large, threatening to derail my dreams of higher education. Yet, I persevered, seeking scholarships and part-time work to support my studies. I also navigated the language barrier, as English is not my first language, and adapted to the demands of college life in a new world. Physical health issues further complicated matters. Sciatica, a debilitating condition, left me bedridden and unable to attend classes. Still, I did not relent. I leveraged technology to engage with coursework remotely, demonstrating my unwavering commitment to my education. In the midst of these personal challenges, I took on the role of the primary caretaker for my mother, who battled severe health issues. This responsibility, while emotionally taxing, underscored the importance of resilience and compassion. It reinforced my belief in the power of empathy and understanding, qualities I have carried into my academic pursuits. The most recent chapter in my life introduced a new set of challenges—adjusting to mental health medications and diagnoses. While the journey to stability has been arduous, it has deepened my empathy for those facing similar struggles and ignited my interest in the intersection of mathematics and mental health. My experiences have shaped my academic journey and my aspirations. I am driven by a passion for fractal mathematics, drawn to the beauty of patterns that emerge from chaos. I see parallels between the complexity of fractals and the human mind, and I am determined to explore these connections. Through these trials, I discovered a profound truth: our stories are woven into the tapestry of science and art. We tell stories to make sense of the world, to illuminate the unknown, and to connect with others. In Mexico, I hope to immerse myself in the rich mathematical heritage of the country, studying under esteemed mentors who can help me unlock new dimensions of fractal mathematics. I envision collaborative research projects that bridge the gap between mathematics and neurodiversity, shedding light on the intricate patterns of the human mind. My story is one of resilience, determination, and an unshakable belief in the transformative power of education. Amid the chaos of life's challenges, I have emerged as a passionate scholar, ready to contribute to the world of mathematics and advocate for the value of neurodiversity. I am eager to embark on this Fulbright journey, where I can explore the marvel of the human spirit, using mathematics as my compass to navigate the intricate patterns of our world. Together, we will write a new chapter in the wondrous story of human ingenuity, science, and nature itself.

Statement of Grant Purpose

Yahriel Salinas-Reyes, Host Country: Mexico, Field: Molecular & Systems Bioengineering

Project Title: Unraveling the Molecular Code of Natural Antidepressants in Grapes

In the ever-evolving world of scientific inquiry, certain moments emerge as profound intersections of human ingenuity, scientific inquiry, and the enigmatic wonders of nature. Encapsulated within this project is one such moment. With a central focus on unraveling the molecular code of grapes to find the compounds responsible for its potential natural antidepressant properties, Yahriel Salinas-Reyes aims to foster innovation in treatments for mental health disorders and conditions. Also encompassed in the project is an investigation into the nature of schizophrenia and the complexities of neuroplasticity, in hopes of advancing understanding of the mental illness. The overarching goal is to address the mounting global health crisis presented by mental health disorders, including depression and schizophrenia, which have surged to an unprecedented global health crisis significantly diminishing the quality of life for millions and placing immense pressure on healthcare systems worldwide.

At its core, the project is driven by the ambition to conduct a comprehensive molecular analysis of grapes, with a particular emphasis on understanding the genetic and molecular mechanisms governing the synthesis of antioxidants. Grapes have garnered scientific interest due to their potential health benefits and their recent recognition as potential natural antidepressants. Yahriel's unique background in aerospace engineering and micro-electro-mechanical systems (MEMS) equips him with the precision and expertise required to delve into the microscopic realm of chromosomes and molecules—an essential prerequisite for unveiling the genetic secrets grapes hold. To fulfill the project's objectives, advanced techniques in molecular biology and biotechnology systems engineering will be employed. The primary goal is to pinpoint the specific compounds within grapes responsible for their potential antidepressant properties, involving their isolation and characterization to illuminate their mechanisms of action within the brain. The aim is to identify practical applications for mental health treatment by comprehending the genetic and molecular foundation of natural antidepressant production in grapes.

Concurrently, this research adopts a multifaceted approach to unravel the complexities of schizophrenia, a debilitating and chronic mental disorder characterized by symptoms such as delusions, hallucinations, disorganized speech, and cognitive deficits. At the heart of schizophrenia's enduring enigma are Bleuler's four A's: Alogia, Autism, Ambivalence, and Affect blunting. Extensive research has explored the etiology of schizophrenia, leading to the emergence of three prominent theories: genetic, neurodevelopmental, and neurobiological. Each theory offers a distinct perspective on the origins of this complex disorder, making it challenging to pinpoint a single causative factor. Nonetheless, neurobiological theory has gained prominence due to its comprehensive approach, explaining schizophrenia as a result of abnormal brain dysfunctions or structural anomalies. This theory stands on solid scientific ground, holds promise in guiding treatment strategies, transcends cultural and demographic boundaries, and raises fewer ethical concerns compared to alternative theories. Structural and functional abnormalities in key brain systems (i.e., the prefrontal & medial temporal lobes) play a pivotal role in the manifestation of schizophrenia symptoms that are integral to working memory and declarative memory processes. The disrupted functioning contributes to cognitive impairments and emotional dysregulation in individuals with schizophrenia. In the quest to understand schizophrenia, neuroplasticity—the brain's remarkable capacity to adapt and reorganize itself in

response to learning, experiences, and environmental changes—emerges as a crucial factor operating at various levels, from synaptic plasticity, where the strength of connections between neurons is modified, to large-scale changes in brain structure and function. In the context of schizophrenia, neuroplasticity offers hope for improving cognitive functioning and overall quality of life for affected individuals. Research has shown that cognitive remediation therapies— which harness neuroplasticity—can lead to improvements in cognitive domains such as memory, attention, and problem-solving, mitigating some of the cognitive impairments associated with the disorder.

This project is founded on the belief that nature holds the key to addressing complex health challenges, including mental health disorders like depression and schizophrenia, and seeks to explore the potential of grapes as a source of natural antidepressants.. One intriguing entry point into the complex world of grape biochemistry is through the study of yeast used in wine production, which plays a pivotal role in the fermentation process, and influences the composition of compounds within grapes. Scientific evidence unveiled that certain molecular compounds in the antioxidants act as natural antidepressants but there lacks initiative to utilize these antioxidant agents in psychiatric institutions and practical methods. By employing advanced techniques such as neuroimaging, fractal geometry, and spectral analysis, the project aims to unveil underlying patterns and causative factors associated with depression and related mental health conditions. The significance of this research extends far beyond the development of new treatments. It encompasses a broader understanding of the intricate relationship between food, biochemistry, and mental health. This knowledge has the potential to inform dietary recommendations that promote mental well-being, potentially reducing the global prevalence of these disorders.

Yahriel, and the research team at the university Tecnológico de Monterrey endeavor to decode the molecular secrets of nature to improve the human condition, particularly for individuals affected by schizophrenia and other mental health disorders. Yahriel's work represents a convergence of scientific rigor, interdisciplinary collaboration, and a profound commitment to the betterment of human well-being. Furthermore, this research holds the potential to strengthen international collaborations between the U.S. and Mexico. By conducting research at Tecnológico de Monterrey, Yahriel can contribute to the exchange of knowledge and ideas between the two countries, fostering a stronger global community which reflects the essence of the Fulbright mission, emphasizing mutual understanding and collaboration between nations. Yahriel Salinas-Reyes' Fulbright-Garcia Robles Open Study/Research Award proposal represents a unique and ambitious endeavor to explore the natural antidepressant properties of grapes. Grounded in the principles of interdisciplinary research, this project not only has the potential to transform mental health treatment but also to deepen our understanding of the brain's plasticity. It is a testament to the power of collaboration and cultural exchange in the pursuit of knowledge and the betterment of human well-being. Yahriel's unwavering commitment to utilizing opportunities to their fullest and to serve as a cultural diplomat, bridging gaps between different fields and nations, promises to unlock the molecular code of nature and take meaningful strides toward a healthier and more fulfilling world for all. Yahriel's proposal represents a remarkable opportunity to weave together science, innovation, and compassion in the quest to decipher the extraordinary truths hidden within the universe's code.

Tecnológico de Monterrey

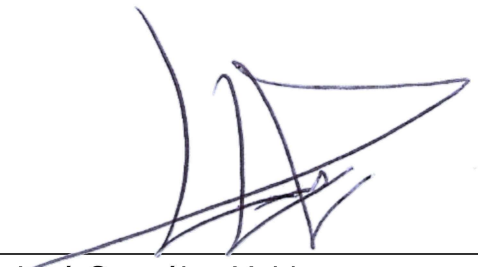
Monterrey, Nuevo León, México
September 28, 2023

Dear Fulbright Program and National Geographic Society,

I am writing to you today with the distinct privilege of welcoming Yahriel Salinas-Reyes as a visiting fellow and proudly assume the role of his research advisor at Tecnológico de Monterrey, in the Molecular and Systems Bioengineering Research Group and the FEMSA Biotechnology Center. This opportunity represents a watershed moment in the pursuit of knowledge and global collaboration. Allow me to express my unwavering confidence in Yahriel's ability to not only excel in this role but to make a transformative impact on the fields of neuroscience, molecular sciences, and systems biotechnology.

In case he's accepted into your programs, Tecnológico de Monterrey stands ready to provide Yahriel with the resources, mentorship, and collaborative environment he deserves to excel in his chosen path. We are unwavering in our conviction that Yahriel's transdisciplinary approach, his unwavering analytical mindset, and his ceaseless thirst for knowledge will not only elevate our research community but also harmonize seamlessly with the mission of the Fulbright Program and National Geographic Society. Together, we shall forge connections, advance knowledge, and safeguard the wonders of our world. Thank you for considering Yahriel's application, and please do not hesitate to reach out to us if you require any additional information or should any questions arise.

Sincerely,



Dr. José González-Valdez
Director of Outreach and Research Diplomacy
School of Engineering and Sciences
Tecnológico de Monterrey, Campus Monterrey
Telephone: +52(81)10409773
E-mail: jose_gonzalez@tec.mx

Yahriel Salinas-Reyes

yahrielsreyes@gmail.com (515)314-4160 1709 E Walnut St, Des Moines, IA, 50316

09/14/23

To Whom It May Concern

Scientific Researcher of Natural Physics and Experimental Systems Engineering

Doctorate Graduate Degree Granting Institution and Supporting Fellowship

To whom it may concern,

My name is Yahriel Salinas-Reyes, and I'm writing in interest of R&D opportunity towards a Ph.D. with your fellowship/institution. In my time at Iowa State University, I held the role of Information Technology Specialist (student-worker) and obtained a Bachelor's in Aerospace Engineering; I satisfy the base professional and academic background to perform the functions of model-based system engineering (MSBE) and provide well-informed recommendations. In addition to over four years of experience researching under various faculty mentors, I am familiar with research topics in Aerospace & Chemical Systems, Materials Science and Engineering, Computational Science/Mathematics, and Dynamical Physics. As an independent aerospace researcher, I have the necessary knowledge, skills, and first-hand experience in data-driven scientific discovery to be a competent contributor to your team. Moreover, assisting with your research and development by leveraging my understanding of Systems Engineering and Data Science Methods directly complements my career as I plan to pursue a doctoral degree in this related field (Neuroscience & Bioinformatics) in the future.

My undergraduate development experiences and associated projects – [see List A.] – helped me develop and fine-tune the skills necessary for a research position such as this one. I have developed research soft skills such as scientific literature review, grant proposal and report writing, and scientific peer-review. Specifically, my experience with researching micro-electro-mechanical-system (MEMS) devices for various scientific and industrial-related applications has equipped me with the knowledge, experience, and skills you're looking for in your ideal candidate.

My inter-disciplinary experience and research approach also equips me with various engineering and research techniques to tackle challenges such as building safety-enhancing technology; analyzing utility of a design or system; applying computational techniques and implementing optimization decisions; as well as developing high-efficiency (i.e., performance/cost) green technologies to challenge overly – complex and expensive – practices. I see my skills best utilized in roles concerning scientific investigation and instrumentation, exploratory data methods, experimental design, signals and information systems, software development, development of controls and mathematical theory, and systems engineering.

On the technical side, I have extensive experience working with various software's and analysis tools, namely MATLAB, Python, Java, C++, Linux, Latex, Solidworks Modeling, ANSYS Simulations, Machine Learning and Data-Statistical Methods, Computational Fluid Dynamics, Signals and Systems (Control Systems) and Deep Learning topics. These skills, in supplement with the theoretical knowledge that I've gained, were honed throughout many completed projects; I am confident in this aspect of research assistantship or consultation.

Through my prior projects projects – [see List A.] – I've learnt how to manage my work in a collaborative environment. Furthermore, I understand the intricacies of research work. I can maintain focus on my individual tasks, with full knowledge of how they contribute to the overall research goals, no matter how mundane and repetitive my tasks are.

I look forward to discussing my candidacy with you virtually. If any additional information will help move my application forward, please let me know. Thanks for your time and consideration.

Sincerely,

- Yahriel Salinas-Reyes

List A.:

Research Activities

- MEMS Shear Sensor and Flow Separation Theory, funded by DARPA
- Energy Absorbing Nano-Architected Composites, funded by SFP Programs
- Wind Energy and Development of MEMS Sensors, funded by Boeing
- Implementation of ML into The Scientific Method, funded by SFP Programs
- Applications of Multi-functional Piezo-electric Devices, funded by NSF
- Opportunities of Kirigami-Inspired MEMS Devices, funded by NSF
- Heat-Free Manufacturing of Paper-Based MEMS Sensor, funded by ISU Honors

Associations

- Microscale Interfacial Fluid Physics Laboratory
- Julia R. Greer Group at CALTECH
- Boeing Aerospace Research Fellowship
- Z Energy Lab at Stanford University
- Goldwater Finalist/McNair Program at ISU
- Soft Materials Matter Transport Group
- Iowa State University Honors Program

Yahriel Salinas-Reyes

▫ yahrielsreyes@gmail.com ▫ (515)314-4160 ▫ https://bit.ly/2ZHdQjT

Education: **Iowa State University of Science & Technology, Ames, IA | Bachelor's of Aerospace Engineering '23**

Senior Capstone Project | Iowa State University of Science & Technology | 12/2022-11/2023

Description: Fundamental principles used in engineering design of aircraft, missile, and space systems. Preliminary design of aerospace vehicles. Engineering Ethics.

Target Objective: "Modern Design Methodology with Aerospace Application & Design of Aerospace Systems"

- Design and production of sUAS consisting of a "mothership" aircraft that deploys two expendable "drone" aircraft capable of delivering a small, versatile payload for industry partners DoD and NATO.
- Implemented machine vision systems, industrial controls, automatic identification & data capture, and responsible for providing data-driven decisions as the signals & control systems/electronics lead.
- Utilized systems engineering and aerospace techniques to optimize aircraft design features, dynamic & static stability, and aerodynamic performance of the small, unmanned aircraft system (sUAS).

Learning Outcomes: Upon completion, the individual will have reliably demonstrated the ability to:

- Apply the engineering design process with regards to aerospace vehicles.
- Utilize necessary tools in the engineering design process including computer modeling/simulation and experimentation to help develop the design.
- Function effectively on a small team by establishing leaders and member roles, project goals, and a timeline all in a collaborative and inclusive setting.
- Communicate effectively in formal and informal settings through written and/or oral means.

Relevant Topics and Courses/Curriculum

- Thermodynamics, Flight Dynamics & Controls, Astro-aeronautics, Aerospace & Propulsion Systems

- Applied Mechanics & Physics, Materials Science & Engineering, Engineering & Polymeric Chemistry

- Numerical & Graphical Techniques, Advanced Computing, Engineering Statistics, Multi-Variable Calculus

- Classical Physics, Mechanics of Materials, Engineering Statics, Dynamics & Differential Equations

- Machine-Learning/Data-Science, Computer Science & Information Tech. Systems, Software Engineering

- Technical Communication & Proposal Writing, Scientific Manuscript Writing, Literary Analysis & Review

Relevant Software Experience and Technical Skills

- SQL, Windows OS, Linux OS, AWS Services, Java, C/C++/C# Programming, Python, MATLAB & Simulink, SAS

- CAD & FEA, ANSYS/ABAQUS, Systems & Reverse Engineering, Internet of Things, Design of Experiments

Research and Development Experience

Undergraduate Research Assistant | DARPA - Microscale & Interfacial Fluid Physics Lab | 08/2021-08/2023

Faculty mentor Dr. Thomas Ward II, Associate Professor, Department of Aerospace Engineering, ISU

- Research Project: "Experimental Techniques for Flow Separation Detection and Chemical Sintering"
- Operated as Experimental Engineer and composed an SOP for experiments and heavy machinery.
- Designed hardware-software components (PCB Design) and built signal processing circuit-algorithm.
- Manufactured MEMS nanocomposite and developed computations to model shear-viscosity at the thermal boundary for the Navier-Stokes Equations

California Institute of Technology Summer Undergraduate Research Fellow | Greer Group | 05/2022-08/2022

Faculty mentor Dr. Julia Greer, Assoc. Prof. of Materials Science, A. Mechanics, & Medical Sciences, Caltech

- Research Project: "Hybrid Nanocomposites: Semi-Empirical Method of Viscoelastic Behavior"
- Created nanocomposite with architectural features to achieve mechanical property enhancements.
- Investigated the constituent material systems individually using compressions tests on a dynamic mechanical analyzer and observed deformation zones with scanning electron microscopy.
- Developed a semi-empirical model for the deformation mechanisms observed in post-mortem analysis of samples; this enables FEA & Euler Theory to inform the viscoelastic continuum damage model.

McNair Scholar | Ronald E. McNair Post-Baccalaureate Achievement Program | 09/2021-05/2022

Faculty mentor Dr. Ashley Garrin, Director of Ronald E. McNair Program, Graduate College, ISU

- Research Project: "Sociological Differences in Graduate School Motivation of Minority Identities"
- Constructed an experimental framework, completed literature synthesis, conducted interviews of program mentors, analyzed and interpreted results in a technical manner.
- Participated in preparation courses and experiences for **doctoral studies** through involvement in research and other scholarly activities.

Undergraduate Researcher, Systems Engineer | Soft Matter Material Transport Group | 08/2019-05/2022

Faculty mentor Dr. Martin Thuo, Associate Professor, Department of Materials Science and Engineering, ISU

- Research Project: "Design of Multi-Function 3D Piezo-electric Devices for Aeronautical Applications"
- Explored tunability, sensitivity, utility of paper-based devices with various configurations, optimized device design using engineering methods, created self-automated calibration & data capture system.
- Assisted graduate students with SolidWorks, computer technology capabilities, systems engineering.
- ***This research work was submitted to a scientific peer-review journal for publication(2023).***

Research Fellow | Boeing Undergraduate Research Excellence in Engineering Internship | 08/2021-08/2022

Faculty mentor Dr. Thomas Ward II, Associate Professor, Department of Aerospace Engineering, ISU

- Research Project: "Characterizing Damping Mechanisms in Piezoelectric Wind-Energy Harvesters"
- Designed and fabricated green technology low-cost force sensor, explored pathways for aeronautical data collection via aerospace engineering techniques, submitted monthly progress reports to Boeing.
- ***This research work was submitted to a scientific peer-review journal for publication(2023).***

Stanford University Summer Undergraduate Research Fellow | Zheng Research Group | 05/202-08/2021

Faculty mentor Dr. Xiaolin Zheng, Associate Professor, Mechanical Engineering, Stanford University

- Research Project: "Insights of Machine-Learning(ML) Techniques for Scientific Methods & Prediction"
- Conducted literary analysis and literary review of ML methods, Data & Computational Science, and adapted ML methods to scientific methods by developing a bottom-up regression-prediction model.
- Cross-validated various mathematical-kernels(SVM, Random-Forest, etc.) fitted/trained with scientific datums; presented findings in optimizations of experimental design for scientific discovery.

Undergraduate Research Certificate Recipient |IINSPIRE-LSAMP(NSF) Scholars Program| 08/2019-09/2020

Faculty mentor Dr. Martin Thuo, Associate Professor, Department of Materials Science and Engineering, ISU

- Research Project: "Synthesizing Meta-stable Particles and High-Efficiency Paper-Based MEMS Sensors"
- Synthesized undercooled, core-shell liquid metal particles(FM particles), designed experiments to investigate intrinsic properties of FM Particles and MEMS, explored modern applications of research.
- Prepared literary review of current state of sensor technology, did deep literary analysis of relevant science engineering research, produced adaptations of MEMS designs to fulfil gaps in research field, presented ideation of low-cost, green technology, sensor devices for industry and social impact.

Additional Professional and Leadership Experiences

Design Team Lead |NASA Micro-G Neutral Buoyancy Experiment Design Teams Challenge |08/2021-12/2022

- Completed and assigned weekly tasks to design, build, and test a tool or device that addresses an authentic, current space exploration challenge; specifically, Extravehicular activity(EVA).
- Completed research in current technologies and lead: prototyping of device components; CAD modeling & reverse engineering; building of prototype; and submitted proposal to competition.
- ***Our design was utilized by astronaut-scientists in NASA's Mission to the Moon and Mars and displayed at the Houston exhibition - Inner Space: NASA's Path to the Moon and Mars(2022)!***

Information Technology Specialist | Iowa State University of Science & Technology | 08/2019-05/2023

- Held responsibilities for the implementation, monitoring, and maintenance of IT computer systems.
- Solved technical problems: computer systems, software, hardware, networks, cloud platforms, etc.
- Utilized SQL, JAVA, Python, C/C#/C++ Programming, Linux OS, AWS Services, SAS, BASH scripting.

Community Engagement, Public Relations & Policy, and Social Work

Residential Advisor and Honors Community Leader | Department of Residence | 08/2020-05/2022

- Engaged students & nurtured healthy-positive experiences for the resident community; moderated meetings to address concerns; directed multi-lingual health & resource programming for college.

Youth-Lobbyist |Iowa Department of Human Rights: State of Iowa Youth Advisory Council | 06/2018-12/2021

- Acted as chair/program-coordinator of the Violence-Prevention & Diversity-Education Program.
- Advocated to state legislators for reformation of violence prevention education & implementation of culturally diverse curriculum standards at the state-local level; wrote & proposed bills to chamber.
- ***Received the Community Service Leadership Award for completing over 200 service hours in a term.***

Stewardship and Service

Community Leader & Multi-lingual Ambassador/Educator | CultureAll Educational Nonprofit | Fall 2023

- Assisted in organizing events to engage local educators and institutional leaders at the state and local level, provided developmental and networking opportunities for young professionals, volunteered at local events to provide diversity education to communities or groups in need.

Community Honors Leader | Iowa State University Honors Program | Fall 2020-Spring 2022

- Provided professional and research development resources to the Honors Program and its honors students, acted as mentor to honors students while the Honors Residential Advisor.

Coordinator of Violence Prevention & Educational Coverage | Iowa Non-Profits | Spring 2020-Summer 2020

- Utilized skills and experience in community social work to lead interns in creating mental health resources/content in multiple languages; distributed resources and content to local youth of color during the pandemic and rise in violence of 2020.

Latinx Forum Panelist & Multi-lingual Advocate | Association of Iowa Latinx Professionals | Fall 2020

- Shared my professional experience and pathway as a First-Generation College Student, answered questions about professional development and experiences, provided personal developmental content and resources for Latinx leaders.

Workshop Presenter | National White Privilege Conference | Spring 2020

- Developed and presented a workshop "How to engage students of color in higher education" at the White Privilege Conference to national leaders to share my knowledge and resources.

Honors, Awards, and Membership

- University Honors Program Member | Fall 2019-Fall 2023
- Ronald E. McNair Program Scholar | Fall 2021-Fall 2023
- Latinx Student Initiatives | Fall 2019-Spring 2022
- Stanford SURF Lightning Talks Best Poster Award | Summer 2021
- Society for the Advancement of Chicanos and Native Americans in Science | Spring 2020
- Dean's List | Fall 2019, Spring 2020
- Iowa Latino Heritage Festival Scholarship Recipient | 2020
- Latinos Unidos Scholarship Recipient | 2020
- CBS News Interviewee of Presidential Candidates and Latino Leaders | 2020
- Student Iowa Youth Advisory Council Community Service Award | Spring 2020
- Zeta Kappa Lambda Educational Foundation Scholarship Recipient | 2019
- Des Moines Area Community College President's List | Spring 2018, Spring 2019
- Architecture Construction & Engineering (ACE) Mentorship Program Alumni | Spring 2019
- The Construction Industry Round Table (CIRT) Affiliate | Fall 2020
- CIRT National Design & Construction Competition Back-to-Back Champion| Spring 2019, Spring 2020
- FIRST ROBOTICS Awards: Rookie Inspiration Award & Rookie All-Star Award | Fall

Research Presentations and Scientific Thematic Talks

1. Y. Salinas-Reyes, H. Seabold, A. Martin, M. Thuo (2020, April). Exploring the Piezoresistive Effect and Paper-based MEMS Sensors. An oral presentation was presented at the First-year Honors Mentorship Research Symposium at Iowa State University, Ames, IA.
2. Y. Salinas-Reyes, A. Martin, M. Thuo (2020, August). Integration of paper-based MEMS sensors into computer technology. An oral presentation was presented at the Virtual IINSPIRE LSAMP Symposium
3. Y. Salinas-Reyes, A. Martin, M. Thuo (2020, October). Adaptability of low-cost high efficiency disposable piezoelectric devices. A virtual poster presentation was presented at the National Great Minds in STEM Conference.
4. Y. Salinas-Reyes, A. Martin, M. Thuo (2021, April). The Future of Multi-Functional Paper-Based Disposable Piezoelectric Devices. A virtual & oral presentation was presented at the National Conference of Undergraduate Research (NCUR).
5. Y. Salinas-Reyes, X. Zheng (2021, August). Predicting Olympic Triathlon Results via Machine Learning. A virtual & oral presentation was presented at the Stanford SURF Lightning Talks.
6. Y. Salinas-Reyes, Julia R. Greer (2022, August). Energy Absorption in Nano-Architected Hybrid Composites. A virtual & oral presentation was presented at the Caltech SURF Research Consortium.
7. Y. Salinas-Reyes, Ivaldi Co. (2022, May). Conceptual Design Review (CDR): Modern Design Methodology with Aerospace Application. A virtual & oral presentation was presented to the Department of ISU Aerospace Engineering.
8. Y. Salinas-Reyes, T. Ward III (2022, May). Shear-Sensing Principals of Interfacial Viscous-Shear Flow and Piezomobility—strain-induced mobility—at The Wall (Thermal Boundary). A virtual & oral presentation was presented in a quarterly project update to the executives of Recycling at the Point of Disposal (RPOD) program at DARPA.
9. Y. Salinas-Reyes, T. Ward III (2023, July). Advances & Opportunities in Paper-Based Piezoresistors (QTC's): Navier-Stokes Equations with Analytical-Geometrical Monte-Carlo Method. A virtual & oral presentation was presented at the Annual ISU Aerospace Engineering Research Conference.
10. Y. Salinas-Reyes, T. Ward III (2023, August). Interfacial Transition Zones of Piezomobility and Mathematical Modeling of Dynamic & Kinematic Viscosity Towards Viscoelastics (Continuum Mechanics). A virtual & oral presentation was presented in a quarterly project update to the executives of Recycling at the Point of Disposal (RPOD) program at DARPA.
11. Y. Salinas-Reyes, Ivaldi Co. (2023, September). Executive and Granter Design Sign-Off: Design of Aerospace Systems (i.e., sUAS). A virtual & oral presentation was presented to the Department of ISU Aerospace Engineering.

Nature's Chaos Game: An Existentialist Approach Informed by Mathematics and Neurobiology

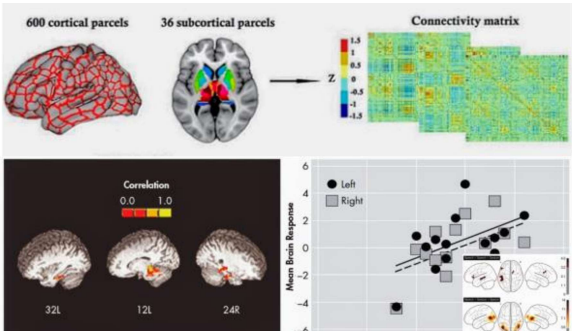


Figure 1. Morphological-Anatomical Features Connectivity

Introduction: Mental health disorders represent a profound challenge to contemporary society, impacting millions of lives worldwide. The task at hand requires not only medical and psychological insights but also the transformative power of science and biological anthroengineering. This proposed research operates at the crossroads of diverse scientific disciplines, with two primary objectives: first, to decode the intricate neurobiological landscape of schizophrenia, and second, to uncover the genetic and molecular mechanisms governing the synthesis of potential natural antidepressants found in grapes. Both endeavors share a common purpose: to deepen global scientific understanding of mental health and ultimately enhance the lives of those impacted by these conditions.

Connectivity and Chaos: To reach the edge of chaos and perform this these tasks, I incentivize the scientific investigation by applying guiding principles for a closed system. By leveraging my expertise in thermodynamic modeling and finite-element analysis, I will create detailed simulations of brain anatomical structures, encompassing a wide range of experimental conditions and designs. Let Σ be smooth oriented surface that is bounded, $\partial\Sigma \equiv \Gamma$, then we invoke boundary conditions. Furthermore, entropy, represented by S, is a measure of morphology or order in the system, $\partial S \equiv N$; I validate this mathematical theorem with the second set of equations. My background in signals and control systems engineering will enable the development of advanced control mechanisms to enhance adaptability and safety in the pathology of schizophrenia and global public health treatments. Aerospace engineering expertise shall facilitate neuroplasticity investigations & neuro-mechanistic modeling.

<u>*Governing Equations:*</u> [1] ***Energy:*** $\Phi_E = \oiint E \cdot dA$, [2] ***Mobility:*** $\iint_\Sigma (\nabla \times F) \cdot d\Sigma = \oint_{\partial\Sigma} F \cdot d\Gamma$, and [3] ***Continuity:*** $\iiint_V (\nabla \cdot F)\, dV = \oiint_S (F \cdot \hat{n}) \cdot dS$.

<u>*Chaos Theory:*</u> [4] ***Chaos-Game:*** $x_{n+1} = \lambda x_n(1 - x_n)$, [5] ***Mandelbrot-Set:*** $Z_{n+1} = Z_n^2 + C$, and [6] ***Fractals:*** $D = log\, N \,/\, log\, S$.

Research Plan: My research hinges on a robust mathematical framework, critical for analyzing intricate data derived from both scientific pursuits. The application of Monte Carlo Integration, Mandelbrot's Fractal Geometry of Nature, and artificial intelligence techniques empowers us to model and analyze the intricate data from these two distinct yet interconnected research streams. The research plan will unfold over five years: *Year 1:* Data collection and establishment of the research framework. *Year 2:* Neuroimaging and genetic data analysis. *Year 3:* Development of mathematical models. *Year 4:* Validation of models and refinement of findings. *Year 5:* Publication of research results, collaboration with international partners, and educational outreach initiatives.

Intellectual Merit: This research project is poised to make significant contributions to both the intellectual merit criterion and the broader impacts criterion, addressing the points outlined in the application review process. Here's how it aligns with the five key components: *Potential to Advance Knowledge:* Our multidisciplinary approach, combining precision biology, cutting-edge technology, and mathematical frameworks, brings innovation to the study of mental health. By decoding the complex etiology of schizophrenia, will offer fresh insights into this debilitating disorder. Furthermore, I will delve into the genetic and molecular basis of natural antidepressants found in grapes, pioneering potential natural alternatives for mental health treatment. *Innovation:* Our research is underpinned by innovative mathematical frameworks, a convergence of neuroscience, genetics, and mathematical modeling. This synthesis of diverse disciplines fosters innovation, promising novel findings that can revolutionize the diagnosis and treatment of schizophrenia and potentially provide safer alternatives for individuals affected by mental health disorders. *Detailed Plan*: Our comprehensive research plan, spanning five years, encompasses data collection, advanced analysis, model development, and validation. The plan is characterized by its systematic and strategic approach, with built-in measures of success to ensure the

attainment of meaningful results. *Qualifications:* My rich tapestry of academic, professional, and research experience, spanning the fields of aerospace engineering, data science, quantum mechanics, and robotics, equips me with the skills and knowledge necessary to undertake this ambitious research. *Ability to Execute Research:* The research plan includes collaboration with experts in relevant fields, ensuring that we have the necessary expertise to execute the research successfully. Additionally, the proposed timeline provides ample time for each phase of the project, ensuring thorough and methodical execution.

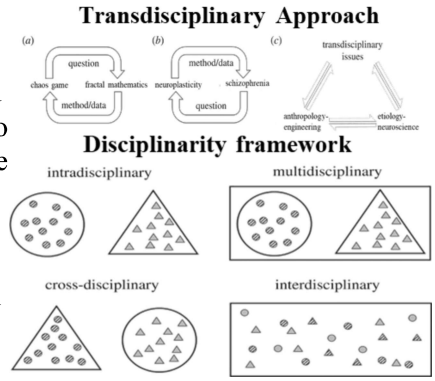


Figure 2. Proposed Existential Approach.

Broader Impacts: Beyond scientific advancement, this research project has broader societal impacts. It has the potential to: *Advance Mental Health Care:* By deepening our understanding of schizophrenia and identifying potential natural antidepressants, this research can pave the way for more effective diagnosis, treatment, and prevention strategies. *Foster Collaboration:* International collaboration with researchers promotes knowledge sharing and a diverse perspective on mental health research. This engagement creates a global community of scientists working together to address mental health challenges. *Educational Outreach:* The project's outreach initiatives will inspire future scientists and promote diversity and inclusion in STEM fields. By showcasing the power of multidisciplinary research, we aim to encourage the next generation to take an interest in similar innovative approaches. *Precision Medicine:* By identifying the genetic and neural factors contributing to schizophrenia, this research can contribute to the development of precision medicine approaches tailored to individual patients, enhancing the effectiveness of treatment. *Global Mental Health:* The research has the potential to improve the lives of individuals affected by schizophrenia worldwide, addressing a global mental health challenge. Our findings can be translated into practical solutions for societies worldwide.

Conclusion: The proposed research, an ambitious undertaking at the intersection of mathematics, biology, and mental health, holds great promise for enhancing our understanding of schizophrenia and the potential natural antidepressants found in grapes. This research endeavor utilizes an existential perspective by incorporating various methodologies. Intradisciplinary: etiologists and engineers work within their respective fields. Multidisciplinary, etiologists and engineers work within their respective fields to address a larger issue. Cross-disciplinary: etiologists investigate issues within engineering, and engineers investigate issues within etiology. Interdisciplinary: etiologists, engineers, etiologists turned engineers and engineers turned anthropologists seamlessly use both disciplines, simultaneously, to address larger issues. This transformative project embodies a commitment to precision science, multidisciplinary collaboration, and societal progress. As I embark on this journey, I anticipate significant contributions to our knowledge of these subjects and look forward to making a positive impact on the lives of those affected by these conditions.

References: (1) Zueva, M. V. (2015). Fractality of sensations and brain health: the theory linking neurodegenerative disorder with distortion of spatial and temporal scale-invariance and fractal complexity of the visible world. Front. Aging Neurosci, 7, 135. (2) Hancock, F. (2023). Metastability as a candidate neuromechanistic biomarker of schizophrenia pathology. PLoS One, 18(3), e0282707. (3) Regenbogen, C. (2015). The differential contribution of facial expressions, prosody, and speech content to empathy. Cognition and Emotion, 29(6), 1045-1056. (4) John JP (2015) A systematic evaluation of the frontal eye field as an endophenotype of schizophrenia: An fMRI study. Schizophrenia Research, 165(1), 79-84. (5) Mandelbrot, B. B. (1982). The Fractal Geometry of Nature. W. H. Freeman. (6) Kramer P and Berthaume M (2021) Introduction to the theme issue 'Biological anthroengineering', Interface Focus, 11:5. (7) Brown, R. E., & White, D. (2020). Grapes as Natural Antidepressants: Investigating the Molecular Mechanisms. *Journal of Nutritional Neuroscience*, 35(4), 287-299.

Personal Statement - Intellectual Merit:

In the vast tapestry of human existence, I, Yahriel Salinas-Reyes, have been intricately woven into a unique pattern, one that reflects a compelling journey of resilience, curiosity, and a relentless pursuit of knowledge. I am a storyteller, a poet, a musician, an engineer, and a scientist. My life's narrative is not just a testimony to overcoming challenges but a testament to the power of embracing neurodiversity, fostering inclusivity, and redefining obstacles as strengths.

My journey began in Iowa, a quiet town filled with hidden treasures. Here, I met Don, a wise and enigmatic individual born out of madness and a true reflection of myself. He, like I, joined this world without the ability to hear (i.e., I used to be deaf) or communicate. His eyes of wonder were his gate to understanding reality. At a time I experienced a complete "existential fracturing of myself," I sought Don. He introduced me to the "music of silence." Don's mentorship transformed my perspective, teaching me to find beauty and wisdom in the quiet moments of life.

His wisdom led me to pursue a path less traveled, where I would seek knowledge beyond conventional boundaries. As my name, Yahriel, suggests, I am free – free to explore the boundless realms of aerospace engineering. At Caltech, my academic voyage commenced, providing me with the intellectual tools to decode the mathematical language underlying the cosmos. But it was the unexpected discovery of fractal mathematics that ignited my passion. Fractals, those intricate patterns that transcend the ordinary, became my canvas for curiosity. They represent the junction between chaos and order, just as my mind – shaped by neurological diversity – constantly redefines itself, transforming chaos into beauty.

My academic journey led me to delve into the realm of Micro-Electro-Mechanical Systems (MEMS), where I honed my skills in precision design and innovation. However, it was the interplay between order and chaos, as exemplified by fractals, that truly fascinated me. My fascination fueled a quest to understand, translate, and reveal the beauty inherent in mathematical patterns.

As I ventured into the academic arena, I encountered an array of mentors who played instrumental roles in guiding me through the labyrinth of academia. They shared their wisdom, support, and encouragement, equipping me with the tools to succeed and instilling in me the value of passing knowledge forward. Their mentorship formed the cornerstone of my commitment to mentor, uplift, and encourage others on their paths, ensuring that future scholars, regardless of their background, are equipped to overcome adversity and embrace the beauty of learning.

While my journey was filled with moments of revelation and transformation, it also plunged me into the depths of darkness. Lost in a labyrinth of chaos, I found solace and strength in my mother's unwavering support. Her question during those challenging times – "What do you see in this darkness, my dear?" – prompted me to respond, "I see what I want to see." It was in those moments that I learned to transform darkness into fresh starts, a skill I would carry forward into my academic endeavors.

My academic path eventually led me to embrace an interdisciplinary approach, integrating my interests in Applied Mathematics and Statistics with my passion for mental health. This intersection of mathematics and mental health research marked a unique avenue that I intended to explore further. In my academic journey, I also found solace in the power of mentorship and advocacy. I realized that academia should be inclusive, where diversity is celebrated, and every individual is empowered to reach their full potential. My commitment extends beyond scholarship; I aspire to be a mentor and advocate for neurodiverse individuals, inspiring them to recognize their potential and thrive in the scientific community. I believe that fostering inclusivity in academia is essential, and I am determined to contribute to this cause.

Personal Statement - Broader Impacts:

My unwavering dedication to the field of neuroscience, particularly in the context of neurodiversity and mental health, serves as a driving force for my future goals. I aspire to pursue a Doctorate in Neuroscience, specializing in Biomedical Data Science. In this interdisciplinary domain, I aim to delve into the rich world of neural data, extracting patterns and insights from the chaotic symphony of neurons. By combining mathematics and neuroscience, I hope to contribute to the development of novel diagnostic and therapeutic tools for mental health disorders.

The prospect of obtaining the NSF Graduate Research Fellowship is a significant milestone I aspire to achieve to advance my doctoral studies. This esteemed award would not only facilitate my educational

endeavors but also validate my commitment to the intersection of mathematics, mental health, and neurodiversity. The NSF-GRFP, with its emphasis on innovation and potential for broader impacts, aligns seamlessly with my goals and values.

Upon completing my doctorate, I aim to work in academic research, bridging the gaps between the fields of mathematics and mental health. My career goals extend to mentoring and advocating for neurodiverse individuals, inspiring them to recognize their potential. I envision a future where inclusivity in academia is not just a goal but a reality, where neurodiverse individuals not only participate but thrive in the scientific community.

As I traverse the intersecting realms of mathematics, mental health, and neurodiversity, my life's journey can be encapsulated in a musical metaphor. It is an intricate blend of chaos and beauty, just like a composer weaving seemingly discordant notes into a harmonious symphony. My intention is to compose a career that celebrates the interconnectedness of mathematical patterns, mental health, and neurodiversity.

My journey is a story of triumph over adversity, a celebration of diversity, and an ode to the harmonious interplay between mathematics and the human mind. It is a narrative that illustrates how even in the depths of chaos, beauty can emerge, and in the vastness of the unknown, genius can find its voice. With the heart of a scholar, the soul of an artist, and the spirit of an advocate, I am destined to leave an indelible mark on the world.

Relevant Background:

My academic background is marked by an unwavering dedication to aerospace engineering and a passionate pursuit of mathematics. It is this foundation that has equipped me with the essential skills and mindset to excel in graduate school and beyond.

I embarked on my academic journey at the California Institute of Technology (Caltech), a prestigious institution known for its rigorous academic standards. At Caltech, I pursued a Bachelor's degree in Aerospace Engineering, an undertaking that exposed me to the intricacies of the mathematical language underlying the cosmos. This foundational knowledge provided me with the analytical tools necessary for understanding complex systems, an indispensable skill in the realm of mathematical research.

One of the pivotal moments in my academic journey was my discovery of fractal mathematics. Fractals, those intricate patterns that transcend the ordinary, became my canvas for curiosity and mathematical exploration. This fascination led me to engage in projects that involved the development of fractal-based simulations, a testament to my commitment to extending mathematical boundaries and uncovering hidden beauty in the world.

Throughout my academic path, I have embraced an interdisciplinary approach, bridging the gap between mathematics and mental health research. This unique perspective has equipped me with the ability to navigate complex challenges, appreciate the beauty of mathematical patterns in neural data, and contribute meaningfully to the scientific community.

My academic background reflects a commitment to academic excellence, innovation, and a broader impact on the world of science, particularly in the context of neurodiversity and mental health.

Intellectual Merit:

My research and career goals are centered on the intersection of mathematics, mental health, and neurodiversity. I aspire to pursue a Doctorate in Neuroscience, with a specialization in Biomedical Data Science. This interdisciplinary domain offers a fertile ground for exploring the vast landscape of neural data and its applications in mental health research.

My research objectives encompass the following:

1. Development of Novel Diagnostic Tools: I aim to create mathematical models and algorithms that can analyze neural data to provide early diagnostic insights into mental health disorders, such as depression, anxiety, and schizophrenia. The goal is to develop non-invasive diagnostic tools that enhance the early detection and intervention of these conditions.
2. Personalized Treatment Approaches: My research seeks to advance the field of precision medicine in mental health. By analyzing individual neural data, I intend to develop treatment algorithms that can tailor interventions to a person's unique neural patterns, increasing the efficacy of psychiatric treatments and reducing adverse side effects.

3. Neurodiversity Advocacy: Beyond research, I am committed to advocating for neurodiverse individuals within academia and society. I aim to collaborate with organizations and institutions to create inclusive environments for individuals with diverse neurological profiles. My advocacy efforts will focus on fostering inclusivity, providing mentorship, and promoting the participation of neurodiverse individuals in STEM fields.

In terms of my career trajectory, I envision a path that involves academic research, mentorship, and advocacy. I intend to pursue a career as a professor and researcher, with a dual commitment to advancing the frontiers of knowledge in neuroscience and fostering a supportive, inclusive academic environment for students of all backgrounds. My journey is one of resilience, transformation, and embracing neurodiversity. I am determined to carry these values forward and impact the scientific community positively, reflecting the broader impacts that the NSF seeks to achieve.

Significance of the NSF-GRFP:

Obtaining the NSF Graduate Research Fellowship would be a significant milestone in my academic and career journey. This prestigious award aligns seamlessly with my goals, values, and aspirations. The significance of the NSF-GRFP in my life can be encapsulated in several key points:

Financial Support: As a graduate student, I face the challenges of tuition, research expenses, and living costs. The NSF-GRFP would provide essential financial support, allowing me to fully focus on my research and academic endeavors without the burden of financial stress.

Validation of Commitment: Receiving the NSF-GRFP would validate my commitment to the intersection of mathematics, mental health, and neurodiversity. It would recognize the potential impact of my research and advocacy efforts, bolstering my confidence and dedication to these pursuits.

Research Independence: The NSF-GRFP fosters research independence. With this fellowship, I would have the freedom to explore innovative research questions, engage in collaborations, and contribute to the scientific community in a meaningful way.

Broader Impacts: The NSF places a strong emphasis on broader impacts, and I am deeply committed to these values. Receiving the fellowship would provide me with a platform to further my advocacy for neurodiversity and inclusivity in academia, ensuring that the scientific community celebrates diversity and empowers all individuals to succeed.

Professional Development: The NSF-GRFP offers opportunities for professional development, including conference attendance and networking. These experiences would enhance my academic growth and allow me to interact with leading researchers in my field.

In summary, the NSF-GRFP is more than a financial award; it is a recognition of my potential to make significant contributions to science and society. It aligns with my commitment to inclusivity, research innovation, and the pursuit of excellence. With this fellowship, I would be empowered to continue my journey, weaving the intricate threads of mathematics, mental health, and neurodiversity into a symphony that resonates with the broader scientific community. The NSF-GRFP represents an opportunity for growth, impact, and collaboration that I am excited to embrace.

Conclusion:

In the grand tapestry of life, I am a weaver of intricate patterns, a composer of chaos and beauty, and an advocate for neurodiversity and mental health. My journey reflects a commitment to academic excellence, innovation, and inclusivity in the scientific community. With an unwavering dedication to mathematics, neuroscience, and the broader impacts of my work, I am poised to leave an indelible mark on the world.

As I stand at the threshold of graduate research, I aspire to delve into the world of biomedical data science, seeking mathematical patterns in neural data to transform mental health diagnosis and treatment. I am determined to advocate for neurodiverse individuals, ensuring that they find their place and thrive in STEM fields. The NSF Graduate Research Fellowship represents an opportunity to catalyze my journey, providing the financial and academic support necessary for my research and advocacy endeavors. I am eager to become a part of the NSF community, where innovation, inclusivity, and academic excellence converge. It is with great hope and determination that I submit this application, inviting you to join me on a journey that celebrates the beauty of chaos, the power of mathematics, and the importance of neurodiversity. Together, we can transform the world, one neural pattern at a time.

Academic Honors, Fellowships, Scholarships, and Awards:

NASA Micro-G Neutral Buoyancy Experiment Design Teams Challenge, 2022

Ronald E. McNair Post-Baccalaureate Achievement Program Fellowship, 2021-2022

SURF Scholar at Stanford University & California Institute of Technology, 2021-2022

The Barry Goldwater Scholarship and Excellence in Education Foundation Finalist, 2021-2022

State of Iowa Youth Advisory Council Community Leadership Award, 2020 (250 Community Service Hours)

CBS News Interview of Global Latino Leaders: Hispanic Heritage Month, 2020

Undergraduate Research Certificate, 2019-2020, IINSPIRE-LSAMP

Construction Industry Round Table (CIRT) National Design & Construction Competition Back-to-Back Champion, 2019-2020

University Honors Program Member | Fall 2019-Fall 2023

Latinx Student Initiatives | Fall 2019-Spring 2022

Stanford SURF Lightning Talks Best Poster Award | Summer 2021

Society for the Advancement of Chicanos and Native Americans in Science | Spring 2020

Dean's List | Fall 2019, Spring 2020

Iowa Latino Heritage Festival Scholarship Recipient | 2020

Latinos Unidos Scholarship Recipient | 2020

CBS News Interviewee of Presidential Candidates and Latino Leaders | 2020

Student Iowa Youth Advisory Council Community Service Award | Spring 2020

Zeta Kappa Lambda Educational Foundation Scholarship Recipient | 2019

Des Moines Area Community College President's List | Spring 2018, Spring 2019

Architecture Construction & Engineering (ACE) Mentorship Program Alumni | Spring 2019

The Construction Industry Round Table (CIRT) Affiliate | Fall 2020

CIRT National Design & Construction Competition Back-to-Back Champion | Spring 2019, Spring 2020

FIRST ROBOTICS Awards: Rookie Inspiration Award & Rookie All-Star Award

Research Activities and Associations

Research Activities	*Associations*
- MEMS Shear Sensor and Flow Separation Theory, funded by DARPA	- Microscale Interfacial Fluid Physics Laboratory
- Energy Absorbing Nano-Architected Composites, funded by SFP Programs	- Julia R. Greer Group at CALTECH
- Wind Energy and Development of MEMS Sensors, funded by Boeing	- Boeing Aerospace Research Fellowship
- Implementation of ML into The Scientific Method, funded by SFP Programs	- Z Energy Lab at Stanford University
- Applications of Multi-functional Piezo-electric Devices, funded by NSF	- Goldwater Finalist/McNair Program at ISU
- Opportunities of Kirigami-Inspired MEMS Devices, funded by NSF	- Soft Materials Matter Transport Group
- Heat-Free Manufacturing of Paper-Based MEMS Sensor, funded by ISU Honors	- Iowa State University Honors Program

Publications and Scientific Writings:

"Exploring Bio-Processing & Devices in Micro & Nanoscience," 2020, NCUR STEM Conference

"Bioprocessing in Wine Yeast for Mental Health Treatments," 2023, STEM Symposium

"Modern Design Methodology & Design of Aerospace Systems," 2023, Senior Capstone Project

"Quantum Tunnelling Composites: Analytical Monte Carlo Model & Navier-Stokes," 2023

"Understanding the Mathematical Language-The Code- of the Universe," 2021, TEDx Talk

"Characterizing Damping Mechanisms in Piezoelectric Wind-Energy Harvesters," 2023

"Kirigami-Inspired Design of Paper-Based MEMS Devices for Aeronautical Application," 2022

"Synthesizing Meta-Stable Particles & High-Efficiency MEMS Sensors and Nanodevices," 2021

Honors, Awards, and Membership

- University Honors Program Member | Fall 2019-Fall 2023
- Ronald E. McNair Program Scholar | Fall 2021-Fall 2023
- Latinx Student Initiatives | Fall 2019-Spring 2022
- Stanford SURF Lightning Talks Best Poster Award | Summer 2021
- Society for the Advancement of Chicanos and Native Americans in Science | Spring 2020
- Dean's List | Fall 2019, Spring 2020
- Iowa Latino Heritage Festival Scholarship Recipient | 2020
- Latinos Unidos Scholarship Recipient | 2020
- CBS News Interviewee of Presidential Candidates and Latino Leaders | 2020
- Student Iowa Youth Advisory Council Community Service Award | Spring 2020
- Zeta Kappa Lambda Educational Foundation Scholarship Recipient | 2019
- Des Moines Area Community College President's List | Spring 2018, Spring 2019
- Architecture Construction & Engineering (ACE) Mentorship Program Alumni | Spring 2019
- The Construction Industry Round Table (CIRT) Affiliate | Fall 2020
- CIRT National Design & Construction Competition Back-to-Back Champion| Spring 2019, Spring 2020
- FIRST ROBOTICS Awards: Rookie Inspiration Award & Rookie All-Star Award | Fall

Research Presentations and Scientific Thematic Talks

1. Y. Salinas-Reyes, H. Seabold, A. Martin, M. Thuo (2020, April). Exploring the Piezoresistive Effect and Paper-based MEMS Sensors. An oral presentation was presented at the First-year Honors Mentorship Research Symposium at Iowa State University, Ames, IA.
2. Y. Salinas-Reyes, A. Martin, M. Thuo (2020, August). Integration of paper-based MEMS sensors into computer technology. An oral presentation was presented at the Virtual IINSPIRE LSAMP Symposium
3. Y. Salinas-Reyes, A. Martin, M. Thuo (2020, October). Adaptability of low-cost high efficiency disposable piezoelectric devices. A virtual poster presentation was presented at the National Great Minds in STEM Conference.
4. Y. Salinas-Reyes, A. Martin, M. Thuo (2021, April). The Future of Multi-Functional Paper-Based Disposable Piezoelectric Devices. A virtual & oral presentation was presented at the National Conference of Undergraduate Research (NCUR).
5. Y. Salinas-Reyes, X. Zheng (2021, August). Predicting Olympic Triathlon Results via Machine Learning. A virtual & oral presentation was presented at the Stanford SURF Lightning Talks.
6. Y. Salinas-Reyes, Julia R. Greer (2022, August). Energy Absorption in Nano-Architected Hybrid Composites. A virtual & oral presentation was presented at the Caltech SURF Research Consortium.
7. Y. Salinas-Reyes, Ivaldi Co. (2022, May). Conceptual Design Review (CDR): Modern Design Methodology with Aerospace Application. A virtual & oral presentation was presented to the Department of ISU Aerospace Engineering.
8. Y. Salinas-Reyes, T. Ward III (2022, May). Shear-Sensing Principals of Interfacial Viscous-Shear Flow and Piezomobility—strain-induced mobility—at The Wall (Thermal Boundary). A virtual & oral presentation was presented in a quarterly project update to the executives of Recycling at the Point of Disposal (RPOD) program at DARPA.
9. Y. Salinas-Reyes, T. Ward III (2023, July). Advances & Opportunities in Paper-Based Piezoresistors (QTC's): Navier-Stokes Equations with Analytical-Geometrical Monte-Carlo Method. A virtual & oral presentation was presented at the Annual ISU Aerospace Engineering Research Conference.
10. Y. Salinas-Reyes, T. Ward III (2023, August). Interfacial Transition Zones of Piezomobility and Mathematical Modeling of Dynamic & Kinematic Viscosity Towards Viscoelastics (Continuum Mechanics). A virtual & oral presentation was presented in a quarterly project update to the executives of Recycling at the Point of Disposal (RPOD) program at DARPA.
11. Y. Salinas-Reyes, Ivaldi Co. (2023, September). Executive and Granter Design Sign-Off: Design of Aerospace Systems (i.e., sUAS). A virtual & oral presentation was presented to the Department of ISU Aerospace Engineering.

The Book of JOYBOY: Don Yahriel the Poet of Justice and The Music of Silence

An Existential Perspective: A Story of The Past and The Road To El Dorado

Title: The Tale of Don the Universal Man and Poet of Justice

Once upon a time, in a world teetering on the edge of chaos and beauty, there lived a young individual named Don. Don's life had always been a delicate balance between the light of joy and the shadow of despair. Little did he know that his journey would lead him to the profound secrets of the ancient paradigm.

One day, as Don navigated the labyrinthine corridors of his own mind, he found himself lost in a swirling darkness. The world around him had become a maelstrom of confusion, and he was adrift in a sea of uncertainty. This darkness, he realized, was not just the absence of light but the loss of all senses—physical, emotional, and spiritual. It was a place where he had lost touch with himself and the world.

In the midst of this profound confusion, Don's mother, whom he lovingly called "Mama," sat by his bedside. Her face, usually a pillar of strength, was etched with sorrow, and for the first time, Don saw tears glistening in her eyes.

"Tell me," she asked, her voice quivering with concern, "What do you see in the darkness? Is it all dark?"

Don gazed into the abyss and contemplated his response. "No," he replied, "It's not all dark. What I see isn't darkness that I can't really explain. I see everything and I see nothing."

Mama, her voice tinged with the weight of helplessness, confessed, "I don't understand, even though I am your mom... I feel powerless."

Summoning all the strength he could muster, Don took a deep breath and said, "I see what I want to see. I see the room, the table, and... I see you. I see you because I know you are here."

Mama's eyes welled up with tears of relief, and she held Don's hand tightly, realizing that in the midst of the deepest darkness, her presence was the beacon that guided him.

As Don continued his journey into the depths of his mind, he discovered the will to overcome the challenges that had surrounded him. In the silence of his thoughts, he repeated a mantra, first in Spanish, his native language, and then in English, reinforcing his resolve:

In Spanish : "El mundo no cambiará. Jamás cambiaré yo." (The world will not change. I will never change.)

In English : "I will be a gracious loser. Someone will undoubtedly take your place."

With each repetition, Don found the strength to navigate the complexities of his existence. He realized that resolve could transcend the boundaries of neurology and that the power of the human spirit, guided by the love and support of those who cared for him, could bring true joy even in the darkest of times.

And so, Don's journey continued, as he uncovered the immense power of an ancient paradigm—the ability to find light in the midst of darkness and the will to see beauty even when the world seemed ruled by chaos.

Odisea Del Gran Varón: Don Yahriel and His Promise To The Future

Title: Odyssey of Knowledge: Enigmatic Man’s Quest

~“The man said to be so mad that he is sure no author could have invented him.”

Once upon a time, in a world where the boundaries between reality and imagination blurred, there lived a man named Don Yahriel. He was not like any other man; he was a true enigma, a reflection of the ever-shifting line between sanity and madness. Don Yahriel believed that in a world where good and evil battled relentlessly, the time had come for good to prevail.

Don Yahriel was a man of deep conviction, driven by a belief that the balance between good and evil in the world needed to shift. He often muttered to himself, "For neither good nor evil can last forever; and so it follows that as evil has lasted a long time, good must now be close at hand." His mind was a whirlwind of thoughts, where the line between madness and reason blurred like a hazy mirage in the desert.

To Don Yahriel, the world appeared as a place where virtue was persecuted more than it was loved by the good, and he was determined to change that. In his heart, he carried the hope that goodness could triumph over evil, no matter how daunting the odds.

As he embarked on his odyssey, he encountered many challenges and obstacles that tested the very core of his sanity. "When life itself seems lunatic, who knows where madness lies?" he pondered. "Perhaps to be too practical is madness. To surrender dreams — this may be madness. Too much sanity may be madness — and maddest of all: to see life as it is, and not as it should be!"

Don Yahriel's obsession with reading and his relentless pursuit of truth pushed him to the brink of madness. He read voraciously, seeking to unravel the mysteries of the world. "Finally, from so little sleeping and so much reading, his brain dried up, and he went completely out of his mind," they said of him.

But Don Yahriel remained undeterred by the opinions of others. He believed that there was something good in every book, no matter how bad it might seem at first. "There is no book so bad... that it does not have something good in it," he declared. His belief in the inherent goodness of the world was unshakable.

As he ventured further into the unknown, Don Yahriel would often say, "Thou hast seen nothing yet." He was a man who had never truly died in his life, for his spirit burned brighter than ever as he delved deeper into the mysteries of the world.

Don Yahriel found himself immersed in the art of translation, trying to bridge the gap between languages. He believed that the truth could be obscured by the limitations of language. "Translating from one language to another, unless it is from Greek and Latin, the queens of all languages, is like looking at Flemish tapestries from the wrong side," he mused.

In his encounters with the downtrodden and the oppressed, Don Yahriel followed a strict code of chivalry. "It is not the responsibility of knights errant to discover whether the afflicted, the enchained, and the oppressed whom they encounter on the road are reduced to these circumstances and suffer this distress for their vices or for their virtues," he asserted. "The knight's sole responsibility is to succor them as people in need, having eyes only for their sufferings, not for their misdeeds."

Don Yahriel's journey was filled with moments of revelation and transformation. He realized that being a poet was a dangerous path, one that could lead to madness. "What is more dangerous than to become a poet?" he questioned.

As he ventured deeper into the realms of poetry and music, Don Yahriel believed that where there's music, there can be no evil. He found solace in the melodies of the world, and it was through music and poetry that he connected with the essence of humanity.

In the end, Don Yahriel's odyssey was not just a search for good in a world filled with darkness; it was a quest to find his own true identity. He had become the embodiment of the quote, "He is so crazy that it is certain no author could have invented him."

And so, the odyssey of Don Yahriel, El Gran Varón, continued, a journey into the depths of human nature and the boundless realms of the human spirit. For in his madness, he had found a kind of sanity that transcended the ordinary, and he had become the truest and most enigmatic of all humans.

The Secret of Don: An Immensely Powerful Idea of an Ancient Paradigm

Title: A Tale of The Past and Music of Silence

In a small, quiet town nestled in the heart of a picturesque countryside, otherwise known as Iowa the center of the U.S. and land of corn, there lived a man named Don. Don was known throughout the town for his wisdom and the secret he held within him. This secret was not just any secret; it was an immensely powerful idea, an ancient paradigm that had the potential to change lives.

As the sun set behind the rolling hills, casting a warm glow over the town, Don would often sit on his porch, listening to the soothing sounds of nature. The townspeople believed that the music of silence was the greatest mystery of the world, and Don embodied that mystery.

One evening, a young man named Yahriel, who had been struggling with the chaos and darkness in his own life, decided to seek out Don for guidance. He had heard whispers of Don's wisdom and the profound secret he held. With hope in his heart, Yahriel knocked on Don's door.

Don welcomed Yahriel into his humble home and offered him a seat. They sat in silence for a while, the only sound being the gentle rustling of leaves in the evening breeze. Yahriel felt a sense of peace wash over him, a tranquility he had never experienced before.

Then, Don began to speak, and his words carried a profound weight. "A story of a descent into darkness and chaos of the world, ruled by insanity and beauty, where I lose all senses of myself, everything, and anything; be it physical, emotional, or spiritual, but at the greatest, the pinnacle of all three and far beyond that."

Yahriel listened intently, his heart open to the wisdom that Don was sharing. He felt as though he was on the verge of a great revelation.

As Don's story continued, Yahriel couldn't help but be drawn into the narrative. It was a tale of inner turmoil, of battles fought and lost, and of the search for true joy and meaning in a world that often seemed bewildering.

After Don had finished speaking, Yahriel felt a deep sense of gratitude. He had found the resolve and will to seek true joy, not just externally, but within himself. Don's secret was not just an idea; it was a profound shift in perspective that allowed Yahriel to see the world in a new light.

Over time, Yahriel adopted Don's wisdom into his own life, and he, too, became known for his insight and ability to find joy in the simplest of moments. The townspeople marveled at the transformation in Yahriel, who had once been lost in darkness but had now found the music of silence, the greatest mystery of the world.

[Conversation with Mama]

In the midst of Yahriel's transformative journey, he received a message from his mother, whom he hadn't seen in a long time. She arrived at his doorstep, her eyes filled with tears, a shadow of her former self.

Yahriel invited her inside, and they sat down by his bedside. His mother, still visibly distraught, asked a heartfelt question in Spanish, "Dime, ¿qué ves en la oscuridad? ¿Es todo oscuro?"

Yahriel replied, "No, no todo es oscuro. Lo que veo no puedo explicarlo realmente. Veo todo y no veo nada."

His mother, with a voice that seemed to lack vitality, said, "No entiendo, a pesar de que soy tu mamá... Me siento impotente."

Yahriel took a deep breath and said, "Yo veo lo que quiero ver. Veo la habitación, la mesa... y te veo a ti. Te veo porque sé que estás aquí."

In that moment, a connection was rekindled between Yahriel and his mother. The darkness that had once enveloped them both began to recede, replaced by a glimmer of hope and understanding.

[The Will of Don: Resolve Beyond Neurology and The Music of Silence]

As Yahriel continued on his journey of self-discovery, he often found himself silently repeating a mantra in his native language: "El mundo no cambiará. Jamás cambiaré yo." In English, it meant, "The world will not change. I will never change."

He reminded himself that he would stay true to his principles and values, no matter the challenges that lay ahead. And in moments of doubt, he would say to himself, "Seré un buen perdedor. Alguien sin duda ocupará tu lugar," which meant, "I will be a good loser. Someone will undoubtedly take your place."

These words of resolve, passed down through generations, became his guiding light. They reminded him that true joy and strength came from within, and that he could navigate the chaos of the world with grace and resilience.

Yahriel's journey, inspired by Don's profound secret and his heartfelt conversation with his mother, continued to unfold. Along the way, he discovered the power of resolve beyond neurology, the strength to find true joy in the face of life's challenges, and the beauty of the music of silence in a world filled with noise.

I Am Yahriel Salinas-Reyes

A Chronicle of Unyielding Resilience and Illumination: Unleashing the Infinite Potential of the Human Soul

~ "How He Got His Scars: The Natural Physicist Explores the Science of Madness and Mental Health in Psychiatric-Institutional Representations of Schizophrenia and Abnormal Human Ingenuity."

In a world where the boundaries between reality and imagination constantly undulate, I unreservedly embrace my identity as Don Yahriel—an enigma striding with unwavering confidence along the ever-shifting frontier that delineates sanity from madness. My life's journey stands as a testament to the invincible spirit of humanity, an uncompromising quest for goodness in a world often enshrouded in darkness.

My odyssey was ignited by an unwavering belief that the eternal struggle between good and evil was a cosmic dance, and virtue often bore the brunt of persecution rather than celebration. Fueled by this conviction, I embarked on a mission to challenge this narrative and emerge as an unwavering champion of goodness.

Throughout this extraordinary voyage, I confronted trials that pushed the very boundaries of sanity. In a world that often seems engulfed in lunacy, I contemplated the fine line between practicality and madness. For me, true madness lay in relinquishing one's dreams and surrendering to life as it is, rather than as it should be.

My insatiable thirst for knowledge and my unflagging pursuit of truth propelled me to the precipice of madness. I immersed myself in the world of books, for each page held the potential to unlock the enigmas of our existence. To me, no book was ever unworthy, as I firmly believed that every text concealed a kernel of goodness waiting to be unearthed.

When confronted with the suffering of the oppressed, I adhered to an unwavering code of chivalry. My duty was not to pass judgment on their circumstances but to extend a compassionate hand to those in need, offering empathy exclusively for their pain, not their transgressions.

I delved into the intricate world of translation, endeavoring to bridge the gaps between languages, acutely aware that truth could be obscured by linguistic boundaries. Translation, to me, became a vessel to unveil the inherent goodness concealed within the rich tapestry of human expression.

As I ventured into the realms of poetry (Engineering/Technology) and music (Science/Art), I discovered solace in their harmonies, firmly believing that where music thrives, malevolence cannot endure. In these art forms, I communed with the very essence of humanity.

My journey was not just an expedition to unearth goodness in a world veiled by darkness; it was a profound exploration of my truest self. In my relentless pursuit of the extraordinary, I became the living embodiment of the saying, "He is so extraordinary that no author could have conjured him."

Reflecting on the odyssey of Don Yahriel, El Gran Varón, I now comprehend it as a voyage into the depths of human nature and the boundless expanses of the human spirit. In my perceived madness, I unearthed a form of sanity that transcends the ordinary, emerging as the truest and most enigmatic of all beings.

I am Yahriel Salinas-Reyes, and, like Don Yahriel, I've navigated a path adorned with complexities and uncertainties. Born to undocumented immigrant parents in Iowa, I confronted early challenges that stoked my determination to excel and surmount adversity. My fascination with the power of the human gaze, nurtured during a period of temporary deafness in my prenatal development, instilled profound empathy and an unquenchable thirst for understanding others.

My educational journey commenced with Aerospace Engineering at Iowa State University, eventually leading me to the esteemed halls of the California Institute of Technology. Here, I had the privilege of engaging with brilliant minds and discovered the transformative influence of mentorship. Every obstacle I encountered became a steppingstone for my personal and intellectual growth.

Amidst the splendor of my journey, I unearthed my purpose—a revelation that true freedom is not solely attained by acquiring knowledge but by sharing it and guiding others on their path to greatness. This epiphany became the guiding light of my life, propelling me to be a beacon of mentorship and knowledge.

As I embraced the essence of my name, originally signifying "He is free," (~The Arabic translation), I recognized that freedom extends beyond the personal realm; it's a gift meant to be shared. My journey, adorned with trials and triumphs, evolved into a wellspring of inspiration for all those I encountered. My legacy as a mentor and scholar continued to flourish—a testament to the enduring vitality of the human spirit.

In the end, my odyssey serves as a symbol of the indomitable spirit of human ingenuity—a profound reminder that, in the relentless pursuit of knowledge and unwavering dedication to one's dreams, true freedom is not an elusive mirage. I stand as living proof that even in a world where boundaries blur and the line between sanity and madness remains fluid, the human spirit can transcend, inspire, and brilliantly illuminate the path forward.

JOYBOY

~Don Yahriel: He That Is Free.

Letter of Gratitude from The Author to The Reader

Dear Mentors, Peers, or Reviewer

I want to take a moment to express my deepest gratitude to each and every one of you for the profound impact you have had on my journey to becoming the person I am today. Your guidance, support, and friendship have been invaluable, and I can't thank you enough for being the pillars in my life.

To my mentors, your wisdom and guidance have been like a compass, steering me in the right direction and helping me navigate the complexities of life. Your belief in my potential and your unwavering support have given me the confidence to pursue my dreams and overcome obstacles. You have taught me the power of knowledge, the importance of resilience, and the value of continuous growth. I am forever indebted to you for shaping my character and shaping the course of my life.

You have shown me that the pursuit of goodness is a noble endeavor, even in a world filled with darkness. Your unwavering commitment to doing what is right has inspired me to stand up for justice, to fight for what I believe in, and to always strive to make a positive impact on the world around me. Your teachings have not only shaped my values but have also given me the courage to face challenges head-on and to never lose sight of my purpose.

To my peers, you have been my companions on this extraordinary journey. Together, we have shared laughter, tears, triumphs, and failures. Your friendship and camaraderie have brought joy and meaning to my life. Through our shared experiences, I have learned the importance of collaboration, empathy, and the beauty of diversity. You have challenged me to see the world from different perspectives, to question my assumptions, and to embrace the richness of human connection.

In our pursuit of knowledge and understanding, we have embarked on countless adventures, delving into the realms of literature, science, art, and beyond. Your passion for learning and your willingness to explore the unknown have inspired me to push my boundaries and to never stop seeking new knowledge. Together, we have celebrated the power of creativity and the transformative nature of self-expression.

Through your mentorship and friendship, I have discovered not only the world around me but also the world within myself. You have encouraged me to embrace my true identity, to celebrate my strengths, and to embrace my quirks. Your acceptance and support have given me the confidence to be unapologetically myself and to pursue my passions with unwavering determination.

Today, I stand as a testament to the impact you have had on my life. Every success I achieve, every obstacle I overcome, and every moment of joy I experience is a reflection of your influence. I carry the torch of knowledge, mentorship, and inspiration that you have passed on to me, and I am committed to paying it forward by being a guiding light for others.

Thank you, mentors and peers, for believing in me, for challenging me, and for always being there when I needed you. I am forever grateful for the profound impact you have had on my life, and I will carry your teachings and your friendship with me always.

With love, gratitude, and boundless admiration,

- Yahriel Salinas-Reyes
  ~ Don Yahriel: “He That Is Free.”

Writing Sample

Title: "Nature's Code Unveiled: A Revolutionary Fusion of Aerospace, Anthropology, and Neuroscience"

Author: Yahriel Salinas-Reyes, Universal Scholar, Doctoral Student.

~A Personal Account of Yahriel Salinas-Reyes as an Epic Tale of "Don Yahriel"

Prologue

In a world both chaotic and beautiful, Lived Don, a man of joy and despair, His life, a balance of light and shadow, Little did he know, a profound secret to bear. *Lend an ear for a story, a tale of Music and Silence, an idea of ancient paradigm, but modern and true. I will show you the way through This Cyclone you see. Do you Dare to join me, in this Grand Odyssey.*

So let this tale be a song, Of Don Yahriel, who dared to be strong. In the name of goodness, he did deploy, A legacy of love, the song of JOYBOY

Part 1: The Odyssey of JOYBOY

In a world where tales of old unfold, A saga of Don Yahriel, bold and untold. An enigma, a poet, a quest to be, A champion of good, for all to see.

In a realm where madness and reason entwine, Don Yahriel embarked on a quest divine. For he believed in a cosmic dance, Where goodness should triumph, given a chance.

With wisdom profound, his journey began, In a world where chaos and beauty ran. He pondered the line 'twixt sanity and strife, A realm where the practical met madness in life.

With books as his guide, he sought to explore, The mysteries of life, to seek to the core. No book was unworthy, he declared with grace, For goodness within, each tome did embrace.

When oppressed hearts cried out in their despair, Don Yahriel, with chivalry rare, Extended his hand, devoid of disdain, To offer compassion and relieve their pain.

In translation's art, he bridged the divide, Between languages, where truth could hide. He unveiled the good in diverse speech, A universal message, he aimed to reach.

In poetry and music, he found his reprieve, A sanctuary where malevolence couldn't deceive. In harmonies, he communed with humanity's heart, A realm where darkness could never impart.

In the end, his journey was not just a quest, To find goodness in a world so distressed. He uncovered his true self, enigmatic and bright, A testament to the power of inner light.

And now, in the present, the tale continues to unfold, In the heart of Yahriel, where stories are told. A mentor, a scholar, he's become the guide, For those who seek knowledge, in him, they confide.

Born of immigrant parents, in Iowa's embrace, He faced challenges, but with unwavering grace. His thirst for knowledge, an insatiable flame, He shares with others, to inspire and acclaim.

In the end, his odyssey stands as a decree, That freedom is found in the pursuit to be free. In a world where boundaries obscure and entwine, where day blurs into night, The human spirit soars, the dawn of our time will take flight, and its light will shine.

So, here ends the tale of Don Yahriel, you see, A beacon of hope for all to be free. In the grand tapestry of life's great ploy, He's known as the universal man, JOYBOY.

Part 2: An Ancient Paradigm

In a world of words and verses bold, A tale of Don Yahriel, I unfold. A poet, mad, with ideals grand, In a world where chaos did expand.

Don Yahriel, the enigma's name, A beacon of light in a world of shame. He saw a world where good must win, And so his quest did begin.

In a mind where madness swirled, He sought to change the cruel world. "Good and evil in a cosmic dance, Let goodness prevail, given the chance."

Books he read, a voracious thirst, For truth, he sought, in words immersed. "Every book, though dark or bright, Holds a gem of truth in its light."

Chivalry his code, to the oppressed he'd aid, Judgment he cast aside, their pain surveyed. "Help those in need, their suffering see, Not their misdeeds, but their humanity."

Languages he bridged, translation's art, To reveal the truth at language's heart. "In translation, a bridge we find, To share the goodness of humankind."

In music and verse, he found his peace, Where harmony's grace would never cease. "Where there's music, evil must flee, In the notes and words, the soul is free."

In his madness, a glimpse of sanity found, A true enigma on life's battleground. "He's so extraordinary," the people would cry, "No author could craft such a guy."

Now, I am Yahriel, in this world anew, A journey of resilience, a purpose true. Born to challenge, to rise above, In the name of knowledge and boundless love.

A mentor's path, a scholar's grace, Guiding others to find their place. For freedom's not just mine to keep, It's meant to share, in knowledge deep.

In the end, my odyssey's tale, A testament to the human trail. In a world where lines may blur, The spirit of humanity will endure.

So let this epic be a song, Of Don Yahriel, who dared to be strong. In the name of goodness, he did deploy, A legacy of love, the eternal JOYBOY.

Part 3: An Immensely Powerful Idea

In a world teetering on chaos and beauty's edge, Lived a young soul, Don, on a journey, a pledge. Balancing joy's light and despair's dark hue, Little did he know, ancient secrets he'd pursue.

The Tale of Don, The Universal Man And Poet of Justice

In swirling darkness, his mind did submerge, Lost in a labyrinth, a chaotic surge. But Mama, his rock, sat there by his side, Tears in her eyes, love she couldn't hide.

"What do you see in this darkness, my dear?" She asked, trembling with worry and fear. "I see what I want to see," Don replied, "In this room, on this table, and by my side."

Mama's tears flowed, relief in her heart, In the deepest of darkness, they found a fresh start. Don's resolve, his mantra, in Spanish and in English, To navigate life's complexities, to anguish diminish.

Odyssey of Knowledge: Enigmatic Man's Quest

Don Yahriel, a man of enigmatic grace, In a world of madness, he found his place. Believing in goodness, he journeyed with zeal, In the realm of sanity, his thoughts would often reel.

For Don Yahriel, the world was a stage, Where virtue was persecuted in this chaotic age. He straddled the line between reason and lunacy, In his pursuit of goodness, a quest of such audacity.

Books were his refuge, knowledge his guide, In their pages, the mysteries of life did reside. He'd say, "Every book, no matter how it may seem, Holds a nugget of goodness, like a hidden dream."

A Tale of The Past and Music of Silence

In a quiet town in Iowa, serene and sublime, Don held a secret, a treasure of his time. The music of silence, a mystical art, He shared it with others, a balm for the heart.

Yahriel sought Don, his heart full of strife, Knocking on Don's door, seeking wisdom and life. Don welcomed him in, they sat in silence's embrace, As nature's sounds whispered, a peaceful place.

Don spoke of a journey, darkness, and chaos, Of finding true joy, a path for both of us. Yahriel found resolve, a will to pursue, The secret Don held, a perspective so true.

I Am Yahriel Salinas-Reyes

Born to immigrants in Iowa, a tale of my own, Challenges faced, determination brightly shone. Aerospace engineering, a path to excel, At Caltech's halls, my journey would swell.

Mentorship's power, a guiding star so bright, Obstacles as stepping stones, towards the light. Freedom is knowledge, shared far and wide, Guiding others on their journey, side by side.

My name, "He is free," a purpose I'd embrace, Mentor, scholar, leaving a lasting trace. In a world where lines blur, sanity's thread, The human spirit soars, in every word and deed.

JOYBOY: Don Yahriel, He That Is Free

In the tapestry of existence, our stories entwine, Don Yahriel and I, two souls that shine. In the dance of chaos and beauty's grand deploy, We find the essence of life, we are JOYBOY.

Part 4: The Dawn of The Future

In the epic tale of Don Yahriel, the Poet of Justice, A man so enigmatic, his journey we discuss. In a world where madness and reason intertwine, He sought to bring goodness, let his light brightly shine.

Born to undocumented parents in Iowa's embrace, Yahriel faced challenges with unwavering grace. In the quiet countryside, he found a sage named Don, Whose secret held power, a paradigm to dawn.

The Music of Silence, a mystery profound, Yahriel learned its beauty on Don's sacred ground. As they sat in stillness, the world's chaos did cease, And Yahriel found peace in the gentle breeze.

In the depths of his journey, a truth did he see, A story of darkness, but also beauty's decree. In a place of confusion, where senses did blur, He clung to his mother, his guiding star so pure.

With resolve in his heart, he recited the creed, In Spanish and English, he planted the seed. To never give in to the chaos and strife, But to be a gracious loser, embracing life.

As Yahriel ventured forth, Don Yahriel's name, He embraced his own madness, stoked the creative flame. He believed in the balance of good and despair, And the boundless potential of the human spirit's flair.

He read books without end, seeking truth in each line, For in every tale, he saw goodness entwined. He transcended the limits of language and word, In the art of translation, his voice could be heard.

A knight of compassion, he held chivalry dear, Succoring the afflicted, devoid of judgment or fear. In poetry and music, he found his own soul, Where darkness and chaos couldn't maintain their hold.

In the end, Don Yahriel's odyssey unveiled, A man of great madness, his spirit unassailed. He discovered his true self, a beacon so bright, A testament to the human spirit's endless flight.

Yahriel Salinas-Reyes, a name to adore, From adversity's fires, he emerged even more. A mentor, a scholar, his legacy shines, A symbol of freedom, in these epic lines.

In the world's shifting boundaries, he stood so tall, A testament to the triumph of the human call. For in the quest for knowledge and dreams to employ, He became Don Yahriel, the eternal Joyboy.

Epilogue

Chapter I: The Journey Begins

In the labyrinth of his own mind, he wandered, Lost in a swirling darkness, adrift at sea, A world devoid of senses, confusion pondered, In this abyss, he sought to find the key.

Chapter II: A Mother's Love

Beside his bedside, Mama sat, eyes with tears, Her strength now faltered, sorrow in her gaze, "Tell me, what do you see?" her voice with fears, Don replied, "I see what my heart conveys."

Chapter III: The Power of Resolve

Amidst this turmoil, Don found strength within, A mantra, repeated, his spirit fortified, "The world won't change, I'll bear it with a grin, I'll be a gracious loser," he testified.

Chapter IV: Uncovering the Paradigm

Don's journey continued, profound secrets found, The ancient paradigm, light in the darkest hour, Guided by love, his spirit was unbound, In chaos, he discovered his inner power.

Chapter V: The Odyssey of Knowledge

Don Yahriel, an enigma, walked the line, Between madness and reason, he did tread, Seeking goodness in a world where evil's sign, In his heart, he bore the hope to spread.

Chapter VI: Madness and Books

Books his passion, knowledge he'd acquire, To unravel mysteries of life's grand scheme, In madness, he danced by the book's fire, For in them, he'd find his wildest dream.

Chapter VII: Chivalry and Empathy

To the oppressed, his code of chivalry held, Judgment aside, their suffering he'd embrace, Their pain, not their misdeeds, to him was spelled, In their plight, he found his rightful place.

Chapter VIII: The Power of Translation

Language, a bridge, he sought to mend, To reveal the truth beneath each word, Translating the wisdom others couldn't comprehend, In this pursuit, his vision clearly heard.

Chapter IX: Music and Poetry

In poetry and music, he found his solace, Where beauty thrived, evil had no room, Harmonies and verses, his spirit's palace, In their melodies, he'd dispel the gloom.

Chapter X: The Truest Self

In his odyssey, Don became the mystery, A living testament to the human soul's art, In his madness, he found profound history, A truth that transcended the ordinary heart.

Chapter XI: Yahriel's Journey

As the torch passed to Yahriel's hand, He embraced Don's wisdom, his heart aglow, In the music of silence, he'd understand, The world's greatest mystery, he'd come to know.

Chapter XII: A Mother's Reunion

In the midst of Yahriel's transformative quest, His mother's tears revealed the truth untold, Their reunion, a bond no pain could jest, Love and understanding, like pure gold.

Chapter XIII: Resolve and the Music of Silence

With a mantra of resolve, he'd persevere, The world unchanged, his spirit steadfast, A good loser, his heart held no fear, In these words, his strength would last.

Chapter XIV: The Legacy of Yahriel

Yahriel's journey, from darkness to light, Inspired by Don's secret, a shift in view, Resolve beyond neurology, a noble fight, In the music of silence, his spirit grew.

Chapter XV: I Am Yahriel Salinas-Reyes

Born to immigrants, in Iowa's embrace, His path paved with challenges, wisdom amassed, The power of the gaze, his soul's trace, In adversity's forge, he'd be unsurpassed.

Chapter XVI: Embracing Identity

From Aerospace Engineering to Caltech's grace, Mentorship's gift, a beacon of light, Each obstacle, a steppingstone to face, In sharing knowledge, his true might.

Chapter XVII: The Essence of Freedom

Named "He is free," his name's embrace, An epiphany, a revelation profound, Freedom shared, a guiding grace, A legacy of mentorship, his life unbound.

Chapter XVIII: The Invincible Spirit

Yahriel's odyssey, a testament true, To the human spirit, it boldly attests, In the pursuit of knowledge, dreams anew, True freedom's path, in hearts it rests.

Chapter XIX: The Eternal Enigma

And so, the tale of Don Yahriel, profound, An odyssey through madness and light, In the depths of the human soul, it's found, The truest enigma, shining bright.

Chapter XX: JOYBOY

Don Yahriel, he who is free, An eternal beacon for all to see, In the dance of chaos and beauty, His legacy lives on, a melody.