Bryan Jose Medina

Curriculum Vitae

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Education

2016-present **B.S. Computer Science, Minor in Mathematics and Cognitive Sciences**, *University of Central Florida*, Orlando, FL, GPA: 3.82/4.00.

Technical Skills

Programming	Python, Java, C++, C, R, Matlab, Javascript, LaTeX, Bash
Software	Emacs, MS Word, MS Powerpoint
Libraries and Frameworks	TensorFlow, Keras, PyTorch, PyGame, Processing, Numpy, SciPy, Matplotlib

Experience

2020-present **Visiting Student, *Department of Brain and Cognitive Sciences***, Massachusetts Institute Of Technology

2020 **MSRP-BIOx Research Intern, *Center For Brains, Minds, and Machines***, Massachusetts Institute Of Technology

Advisor: Dr. Josh McDermott

Investigating viability of deep neural networks as a model for human pitch perception

Developing code in TensorFlow to perform numerous auditory tasks and layer-wise tests to compare model performance to humans

Funded by the Center for Brains, Minds, and Machines, the National Science Foundation, and the Ronald E. McNair Scholars Program

2020-present **Researcher, *Senior Design Capstone Project***, University of Central Florida

Comparing different machine learning models (probabilistic, recurrent neural networks, transformers) on vulnerability detection using only Git commit messages using TensorFlow and Keras

Wrote code to scrape internet for Git commit information

2019-2020 **Independent Researcher**, University of Central Florida

Developed generative models with gated recurrent networks in order to optimize sound synthesis

Compared gated recurrent networks to long-short term memory units on music synthesis

2019-2020 **Undergraduate Research Assistant, *Laboratory for Autonomy-Brain Exchange (LabX)***, University of Central Florida

Advisor: Dr. Ben D. Sawyer

Experimented with Generative Adversarial Networks and how they function with images, audio, and neural data like Electroencephalograms

Assisted in editing and developing code for a driving simulation study

2019 **Undergraduate Program in Neural Computation Research Intern, *Center for the Neural Basis of Cognition***, Carnegie Mellon University

Advisor: Dr. Robert E. Kass

Used statistical analyses in Python, Matlab, and R to establish feed-forward functional relationships between six visual processing regions in mice

Developed code as foundation for future exploratory research

Funding by the National Institute for Health

2018-2019 **Undergraduate Research Assistant, *Center for Research in Computer Vision***, University of Central Florida

Advisor: Dr. Mubarak Shah

Learned how to use and develop code with KERAS

Developed convolutional neural networks to recognize actions in video files

Leadership and Membership

2020-present **Graduate Prep Advisor, *Academic Advancement Programs***, University of Central Florida

Supervisor: Colleen Smith

Assists students in graduate application process

Help with workshops on personal statements, fellowship writing, and the like

2020 **Attendee, *Virtual Brains, Minds, and Machines Summer Course***, Center for Brains, Minds, and Machines

Coordinators: Dr. Tomaso Poggio, Dr. Gabriel Kreiman, Dr. Boris Katz

Attended workshops and poster presentations by graduate students and faculty on Computational Neuroscience, Artificial Intelligence, Philosophy, etc.

2020-present **Vice-President, *SACNAS***, University of Central Florida

Advisor: Michael Aldarondo-Jeffries

Planning outreach activities with club Outreach Coordinator

Working with advertising chair to promote club on social media

2020-present **Co-Founder**, **Vice-President, *Cognitive Sciences Club***, University of Central Florida

Advisor: Dr. Luis Favela

Organizing workshops for techniques in Cognitive Sciences research

Inviting professors to give talks on their research in the field

Reaching out and advertising club to students around campus

2020-present **Journal Club Attendee, *UCF NLP Group***, University of Central Florida

Advisor: Dr. Fei Liu

Accepted to attend biweekly meetings on various topics in natural language processing, such as multi-document summarization, natural language generation, and natural language understanding

Learning PYTORCH with the help of graduate students and Dr. Fei Liu

2020 **Attendee, *Quantitative Methods Workshop***, Massachusetts Institute Of Technology

Attended workshops on spike train analysis, machine learning, systems neuroscience, cognitive science, and genomics

Networked with professors, post-docs, graduate students and research assistants.

Assisted other attendees with MATLAB questions

Awards and Honors

2020 ***Hispanic Heritage Scholarship Fund of Metro Orlando*** **Scholar**

2020 ***Hispanic Scholarship Fund*** **Scholar**

2020 **McNair Summer Research Institute Scholarship**

2020 **Massachusetts Institute of Technology Summer Research Fellow (NSF Funded)**

2019 **Ronald E. McNair Scholar**

2019 **Carnegie Mellon University Summer Research Fellow (NIH Funded)**

2017 **President's Honor Roll** (x4)

2017 **Dean's List** (x4)

2016 **Bright Futures Academic Scholar**

Abstracts, Conferences, and Presentations

ARO 2021 **Medina, B. J.**, Saddler, M. R., McDermott, J. H., (Expected 2021, February). *Pitch Representations Emerge in Artificial Neural Networks Optimized for Everyday Auditory Tasks.* Abstract submitted.

CECIIS-2020. **Medina, B. J.**, Saddler, M. R., McDermott, J. H., (2020, October). *Investigating artificial neural networks optimized for ecological auditory tasks as a normative model of pitch perception.* Abstract accepted. Oral presentation.

SACNAS. **Medina, B. J.**, Saddler, M. R., McDermott, J. H., (2020, October). *Investigating artificial neural networks optimized for ecological auditory tasks as a normative model of pitch perception.* Abstract accepted. Poster presentation.

Baylor University McNair Conference. **Medina, B. J.**, Saddler, M. R., McDermott, J. H., (2020, October). *Investigating artificial neural networks optimized for ecological auditory tasks as a normative model of pitch perception.* Abstract accepted. Poster presentation.

MSRPx BIO Presentation. **Medina, B. J.**, Saddler, M. R., McDermott, J. H., (2020, August). *Investigating artificial neural networks optimized for ecological auditory tasks as a normative model of pitch perception.* Oral presentation.

UCLA McNair Conference. **Medina, B. J.**, Saddler, M. R., McDermott, J. H., (2020, July). *Investigating artificial neural networks optimized for ecological auditory tasks as a normative model of pitch perception.* Abstract accepted. Poster presentation.

Vision Sciences Society Annual Meeting. Hernandez, C. I., Rahill, K., Pham, M., Manriquez, L., Louis, P., Figueroa, A., **Medina, B. J.**, Wolfe, B., Sawyer, B. D., (2020, May). *Prevalence effects are not driving hazard detection on the road.* Abstract accepted. St. Pete Beach, FL. Did not attend due to COVID-19 (Coronavirus) pandemic.

Showcase of Undergraduate Research Excellence. Hernandez, C. I., Rahill, K., Pham, M., Manriquez, L., Louis, P., Figueroa, A., **Medina, B. J.**, Wolfe, B., Sawyer, B. D., (2020, April). *Prevalence effects are not driving hazard detection on the road.* Abstract accepted to Conference at the University of Central Florida, canceled due to COVID-19 (Coronavirus) pandemic

Center for the Neural Basis of Cognition's Summer Undergraduate Poster Session. **Medina, B. J.**, Olanrire, T., Siegle, J., Kass, R. E., (2019, August). *Response Latencies Across Six Visual Areas in the Mouse*. Presented research conducted with Dr. Robert E. Kass and Tolani Olanrire, Ph.D. student in Machine Learning, at Carnegie Mellon University

Teaching

2020 **Tutorial, *UCF NLP***, University of Central Florida

Gave the lab a presentation on recurrent neural networks, long short term memory units, gated rectified units, and transformers

2019 **Python Lecturer, *LabX***, University of Central Florida

Presented to *LabX* lab members the basics of python programming, such as variables, functions, conditional statements, loops, and the like

Demonstrated and walked through pre-constructed examples made before presentations

2019-2020 **Undergraduate *EXCEL* Tutor**, University of Central Florida

Tutored students in UCF's *EXCEL* program on various topics in Mathematics, Physics, and Computer Science

Mentored students on future opportunities to explore and how to study for current and future courses

2017 **Teaching Assistant and Lecturer, *Summer Institute @ UCF***, University of Central Florida

Lectured video game development to various students in Orange, Osceola and Seminole county

Created various assignments and examples for students to learn from and use as reference material

Graded assignments from students in a timely manner.

Invited Talks and Workshops

2020 **Summer Research Panel**, University of Central Florida

Discussed tips on how to succeed in a summer research setting as well as on admissions process.

2019 **STEM Seminar Student Panel**, University of Central Florida

Discussed techniques, tips and tricks on how to succeed as an undergraduate in a STEM field.

2018 **Mathematics Workshop**, Hialeah Gardens High School

Presented and lectured students on topics in Calculus for AP Exam Preparation.

Demonstrated to students the career possibilities available to them upon studying mathematics.

2018 **Lecture on Computer Science and Engineering**, Orange County Preparatory Academy

Discussed to elementary school students the importance of diversity in STEM fields and careers

Explained to students concepts of Python program and showed students how to construct a simple game with the *PyGame* Python library

Volunteering

2019, 2020 **Volunteer, *SECME Regional Competition***, University of Central Florida

Helped students setup and present their SECME competition entries

Discussed competition entries with individual groups

2019, 2020 **Judge, *SECME Codecraft Computer Programming Competition***, University of Central Florida

Judged competitions entries from elementary school and middle school students.

Provided feedback on their project submissions and how they could improve as programmers

2020 ***GIS Day* Voluneer**

Helped set up event and guide students to designated work stations

2016 **Teacher, *Hour of Code***, University of Central Florida

Taught basic programming concepts to elementary school students in a hands-on environment

Certification

2020 ***CITI Program*, Social / Behavioral Research Investigators and Key Personnel**

Relevant Coursework

Computer Science + Statistics Courses	Theory of Computation, Data Structures, Object Oriented Programming, Algorithms, Robot Vision, Machine Learning*, Advanced Artificial Intelligence*, Senior Design I and II**, Statistical Theory I, Statistical Foundations for Data Science and Artificial Intelligence**
Mathematics Courses	Calculus I-III, Ordinary Differential Equations, Linear Algebra, Probability, Random Processes and Applications, Advanced Calculus I***.
Other Courses	Chemistry I, Chemistry II, General Psychology, Biological Principles, Numerical Computing, Language and Culture**, Philosophy of Mind**, Sensation and Perception***, Minds and Machines: Philosophy of Cognitive Science***.

* - *Graduate Coursework*

** - *In Progress*

*** - *To be completed*

Languages

English	Fluent
Spanish	Fluent
Portuguese	Basic