

EDUCATION

- BS** University of Central Florida (UCF), 4th year Aug 2020 – Present
GPA: 3.842 / 4.000
- Major in Computer Science
 - Major in Mathematics, Computational Track

HONORS, PROGRAMS, AND AWARDS

Research Experience for Undergraduates in Programming Languages (REPL) 2023

NSF funded summer research program held at the University of Pennsylvania (Penn) intended to expose students to research in programming languages and prepare them for graduate study in the field. REPL participants conduct research with faculty and graduate students from PLClub, Penn's research group in programming languages. Students also attend PLClub+: a series of activities, seminars, and workshops intended to give them the tools they need to succeed in programming languages research.

McNair Scholars Program 2022

Federal TRIO program that prepares undergraduate students for doctoral studies through involvement in research and other scholarly activities. McNair participants are members of a group traditionally underrepresented in graduate education and have demonstrated strong academic potential.

National Hispanic Scholarship 2020

Merit scholarship awarded by the University of Central Florida to entering high school graduates recognized for their outstanding academic performance.

Florida Academic Scholars Award 2020

Merit scholarship awarded by the Florida Department of Education to Florida high school graduates recognized for their high academic achievement.

RESEARCH EXPERIENCE

University of Pennsylvania, Department of Computer and Information Science Jun 2023 – Present
Faculty Mentor: Dr. Steve Zdancewic, Ph.D., Schlein Family President's Distinguished Professor and Associate Chair, Penn, Department of Computer and Information Science

- Investigated continuous and pseudo-differential maps between Banach spaces and the space of programs, modeled using coherence space semantics, in an effort to study continuous optimization methods used for training neural networks
- Constructed an admissible coherence-space representation for arbitrary Banach spaces, in the sense of the Type-II Theory of Effectivity, and classified the stable maps between coherence spaces that represent differentiable maps, which we call pseudo-differential maps
- Draft Notes: <https://github.com/unsonnet/papers/blob/main/cohdiff-notes.pdf>
- Presentation Slides: <https://github.com/unsonnet/papers/blob/main/cohdiff-slides.pdf>
- Area: Type Theory, Denotational Semantics, Machine Learning, Representation Theory

University of Central Florida, Department of Mathematics Jun 2022 – Present

Faculty Mentor: Dr. Alexander Tovbis, Ph.D., Professor, UCF, Department of Mathematics

- Investigated probability distribution of possible maximal amplitudes occurring in finite-gap solutions for the focusing nonlinear Schrödinger equation
- Derived an exact multivariable recurrence relation and asymptotic approximations for calculating the probability distribution
- Draft Notes: <https://github.com/unsonnet/papers/blob/main/tovbis-research.pdf>
- Area: Probability Theory, Generating Functions, Complex Analysis, Number Theory

University of Central Florida, ENC 1102 Composition II May 2021 – Jun 2021

Instructor: Professor Ian Kay, M.F.A., Adjunct Professor, UCF, Department of English

- Developed a possible worlds model to account for the apparent knowledge gained when carrying out thought experiments
- Provided theoretical justification for thought experimental knowledge by subsuming it under modal inference
- Paper: <https://github.com/unsonnet/papers/blob/main/enc1102-research.pdf>
- Area: Modal Logic, Epistemology, Thought Experiments

WORK EXPERIENCE

UCF Varsity Programming Team

Aug 2021 – May 2022

UCF, Department of Computer Science

Supervisor: Professor Arup Guha, M.S., Senior Instructor, UCF, Department of Computer Science

- Competed in local and regional programming contests as part of UCF Sakura
- Placed 15th in the 2021 ACM Southeast USA Regional Contest – Division 1
- Area: Advanced Data Structures, Graph Theory, Computational Complexity Theory

UCF Developmental Programming Team

Aug 2020 – May 2021

UCF, Department of Computer Science

Supervisor: Dr. Ali Orooji, Ph.D., Associate Professor, UCF, Department of Computer Science

- Competed in local and regional programming contests as part of UCF Utah Teapot
- Placed 20th in the 2020 ACM Southeast USA Regional Contest
- Area: Advanced Data Structures, Graph Theory, Computational Complexity Theory

RELEVANT COURSEWORK

Mathematics: COT 4210 Discrete Structures II (A), MAA 4226 Advanced Calculus I (A), MAS 4301 Abstract Algebra I (A-), MAS 4302 Abstract Algebra II (B), MTG 4302 Introduction to Topology (A), MTG 5253 Intro to Differential Geometry (B), MAP 5336 Ordinary Differential Equations and Applications (A), MAS 5311 Algebra 1 (in progress), MHF 5937 Intro to Logic (in progress), Category Theory Reading Group (in progress)

Computer Science: CDA 3103C Computer Logic & Organization (A), COP 3503C Computer Science II (A), COP 4020 Programming Languages I (A), MAP 4384 Numerical Methods for Computational Sciences (B+), COP 4331C Processes of Object-Oriented Software (A), EEL 4768 Computer Architecture (A-), CAP 5610 Machine Learning (in progress)

Writing: ENC 1102 Composition II (A), PHI 2010 Introduction to Philosophy (A)

ADDITIONAL INFORMATION

Language: Fluent in English and Spanish

Citizenship: Double citizenship in Colombia and the United States of America

REFERENCES

Dr. Steve Zdancewic, Ph.D., Schlein Family President's Distinguished Professor and Associate Chair
Department of Computer and Information Science
University of Pennsylvania
Office: 511 Levine Hall
Phone: 215-898-2661
Email: stevez@cis.upenn.edu

Dr. Alexander Tovbis, Ph.D., Professor
Department of Mathematics
University of Central Florida
Office: MSB 323
Phone: 407-823-3273
Email: alexander.tovbis@ucf.edu

Dr. Ali Orooji, Ph.D., Associate Professor
Department of Computer Science
University of Central Florida
Office: HEC 345
Phone: 407-823-5660
Email: orooji@eecs.ucf.edu

Professor Arup Guha, M.S., Senior Instructor
Department of Computer Science
University of Central Florida
Office: HEC 240
Phone: 407-823-1062
Email: dmarino@ucf.edu

Professor Ian Kay, M.F.A., Adjunct Professor
Department of English
University of Central Florida
Phone: 407-823-2295
Email: ian.kay@ucf.edu