BRYON TJANAKA

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RESEARCH INTERESTS

quality diversity optimization, evolutionary algorithms, reinforcement learning, human-robot collaboration

EDUCATION

Ph.D. Computer Science   Aug. 2020 - Present
  University of Southern California (Los Angeles, California, USA)
  Advisor: Stefanos Nikolaidis
B.S. Computer Science (ICS Honors program, AI specialization)   Sept. 2017 - Jun. 2020
  University of California, Irvine (Irvine, California, USA)
  GPA: 4.0/4.0 • **GRE:** 170/170 quant., 161/170 verbal, 5/6 writing
High School   Aug. 2013 - May 2017
  Bellarmine College Preparatory (San Jose, California, USA)
  GPA: 4.3/4.0 • **SAT:** 2350/2400

HONORS AND AWARDS

National Science Foundation Graduate Research Fellowship	Mar. 2021
George Bekey Fellowship (USC)	Feb. 2021
USC Graduate School Fellowship for Incoming Students	Feb. 2020
Summa Cum Laude, UCI School of ICS	Jun. 2020
National Science Foundation Graduate Research Fellowship Honorable Mention	Mar. 2020
UCI Dean's Honor List	Sept. 2017 - Mar. 2020
UCI Regents' Scholarship	Sept. 2017 - Jun. 2020
UCI UROP Fellowship(s) for *Improving Molecular Simulations*	Jan. 2020, Jan. 2019
UCI UROP Honorary Fellowship for *Implications of Mall Security Robots*	Jan. 2018
7th/88 at ACM ICPC 2019 SoCal Regional	Nov. 2019
39th/4103 in world, 4th/202 in US at IEEEXtreme 13.0	Oct. 2019
Best Entrepreneurial Hack at HackUCI V hackathon	Feb. 2019
John Hollowell Composition Program Award for Best Advocacy Project, UCI School of Humanities	May 2018
2017 VEX Robotics High School World Champion	Apr. 2017
Recognition for VEX Robotics Championship, Rep. Ro Khanna, CA-17	Aug. 2017

RESEARCH AND PROFESSIONAL EXPERIENCE

Research Assistant   Aug. 2020 - Present
  ICAROS Lab, University of Southern California (icaros.usc.edu)
  Advisor: Stefanos Nikolaidis
Undergraduate Researcher   Oct. 2019 - Jun. 2020
  Intelligent Dynamics Lab, UC Irvine (indylab.org)
  Advisor: Professor Roy Fox
Undergraduate Researcher   Oct. 2018 - Jun. 2020
  Mobley Lab, UC Irvine (mobleylab.org)
  PI: Professor David Mobley, Graduate Mentor: Jessica Maat
Independent Undergraduate Researcher   Oct. 2017 - Jun. 2018
  Mentor: Professor Caesar Sereseres
Software Engineering Intern, Google Ads   Jun. 2020 - Aug. 2020
Software Engineering Intern, Google Ads   Jun. 2019 - Sept. 2019
Engineering Practicum Intern, Google Assistant   Jun. 2018 - Sept. 2018
  Google, Inc. (Mountain View, California, USA)

PRESENTATIONS

Improving Molecular Simulations through Force Field Development and Computational Techniques
   2019 UCI Undergraduate Research Symposium
Implications of Mall Security Robots on Privacy of Shoppers
   2018 UCI Undergraduate Research Symposium

ATTENDED CONFERENCES

ICLR 2020 (virtual; received travel award)	April 2020
UCI Undergraduate Research Symposium	May 2018, May 2019

ORGANIZED CONFERENCES

Webmaster, SoCal Graduate Pathways to STEM (vgsa.usc.edu/gps)	Oct. 2020

MENTORSHIP

Raymond Walker II (high school, USC SHINE (viterbik12.usc.edu/shine) program)	Jun. 2021 - Aug. 2021
Sam Sommerer (undergraduate, ICAROS Lab)	Aug. 2020 - Present
Kai Malloy (Fulbright scholarship applicant, awarded semifinalist)	Aug. 2020

LEADERSHIP & SERVICE ACTIVITIES

Panelist, USC SURE (viterbigradadmission.usc.edu/sure) PhD Panel	Jun. 2021
Panelist, UCI WICS (wics.ics.uci.edu) Grad School Panel	Apr. 2021
Webmaster, USC Viterbi Graduate Student Association (vgsa.usc.edu)	Aug. 2020 - Present
Senator, USC Graduate Student Government (gsg.usc.edu)	Aug. 2020 - May 2021
Internal Vice President / Competitor, ACM UC Irvine Chapter (acm-uci.org)	Sept. 2017 - Feb. 2020
Speaker / Volunteer, Google Girl-Powered VEX Robotics Workshop	Jul. 2017, Aug. 2018, Jun. 2019

SELECTED PROJECTS

Actor-Critic by Committee (ACBC)   Oct. 2019 - Jun. 2020
Associated with: Undergraduate Researcher at Intelligent Dynamics Lab
Hierarchical reinforcement learning algorithms typically use a high-level controller to compose sub-policies sequentially or combinationally. Inspired by work on ensembles, we developed an algorithm, ACBC, in which outputs from multiple sub-policies, or experts, are composed with a linear combination. As the experts can control their weights, ACBC performs both sequential and combinational composition without a high-level controller.

**Improving Molecular Simulations through Force Field Development
and Computational Techniques**   Oct. 2018 - Jun. 2020
Associated with: Undergraduate Researcher at Mobley Lab
smirnoff99Frosst is a molecular dynamics force field, a set of parameters which defines how atoms interact in a system. Like many force fields, smirnoff99Frosst lacks parameters for improper torsions, which determine the planarity of molecules. This project involved building a pipeline which analyzes the eMolecules database of 6 million molecules to create new parameters, thus increasing the accuracy of smirnoff99Frosst.

Multithreaded Affinity Clustering   Jun. 2019 - Sept. 2019
Associated with: Software Engineering Intern at Google
Affinity clustering is a clustering algorithm which approximates the high quality of hierarchical agglomerative clustering while running in linear time. In this project, a multithreaded version of affinity clustering was implemented, optimized, and evaluated. Ultimately, this algorithm has applications in Ads and Search quality. This work is included in two pending publications.