Daniele Moro

Interests: Deep Learning, Computer Vision, ML Quantization, Generative AI
Skills: TensorFlow, Keras, Numpy, JAX, Scikit-learn, Pandas, Unity

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◈ *Google Scholar*

Google Research - Senior Software Engineer (Full Time) – *Mountain View, CA*
  Tech lead for applied research in ML quantization, compression, and ML-hardware co-design for both LLM and vision deep learning models.

Dec 2023 - present

YouTube - Senior Software Engineer (Full Time) – *Mountain View, CA*
  Applied Research in AI and Machine Learning, with emphasis on ultra-efficient quantized model architectures co-designed with application-specific custom hardware
  Invented novel ML-based techniques for the upcoming AV2 video codec standard.
  Designed, trained, and launched ML models to the YouTube Video Compute Unit
  Promoted to Senior Software Engineer in May 2023

May 2022 - Dec 2023

Google Devices and Services - Software Engineer (Full Time) – *Mountain View, CA*
  Researched quantization-aware training techniques. Key contributor to QKeras library.
  Designed and coded the team's primary model training and experimentation platform
  Presented at tinyML Summit 2022 and the tinyML AutoML Forum

Aug 2020 - May 2022

Google Software Engineering Intern – *Mountain View, CA*
  Researched ML for saliency detection on video codecs for YouTube and Stadia. Awarded patent.

May 2019 - Aug 2019

Kleiner Perkins Engineering Fellow: Area 1 Security – *San Francisco Area*
  Applied natural language processing and ML techniques to detect email phishing attacks.
  Selected as one of 50 KP Fellows from ~3000 applicants. Networked with leaders in Silicon Valley.

June 2018 - Aug 2018

Student Researcher in AI and Natural Language Processing – *Boise State University*
  Researched ML-predicted semantics of hand poses with embodied NLP techniques
  Published as 1st author to SemDial 2018; presented at 5 conferences.

Oct 2017 - Aug 2020

Carnegie Mellon Robotics Institute Student Researcher – *Carnegie Mellon University*
  Researched data-driven, machine learning control strategies for dexterous robotic hands.
  Published two papers and awarded a patent

Aug 2017 - Aug 2020

Robotics Institute Summer Scholar – *Carnegie Mellon University*
  Built neural networks to perform inverse kinematics of simulated soft robots.
  Received the National Science Foundation Research Experience for Undergraduates scholarship
  Selected as one of 11 out of over 1500 applicants. Published and presented to RISS WPJ.

June 2017 - Aug 2017

Augmented Reality and Virtual Reality Alliance Founder – *Boise, ID*
  Founded a startup to develop virtual and augmented reality technologies to enhance training programs and involvement in STEM. Originally started as a club for Boise State students.
  Won the 2017 Bronco Hackathon 48 hour coding competition (link)

Oct 2016 - Aug 2020

Computer Science Tutor – *Boise State University*
  Helped hundreds of computer science students with classwork and computer science basics

Jan 2017 - May 2017

Student Researcher: Sonar Sensor Network – *Boise State University*
  Developed hardware and code for a network of ultrasonic snow depth sensors using Arduino

June 2015 - Jan 2017

Education

B.S. in Computer Science at Boise State University
  minor in Applied Mathematics
  member of the Honors College
  Graduated as a Top Ten Scholar of the class of 2020
Notable Courses:

Fall 2016 - **Spring 2020**
GPA: 4.0
Honors: Summa Cum Laude

  - Machine Learning (*graduate level*)
  - Matrix Methods in Data Science (*graduate level*)
  - Natural Language Processing (*graduate level*)
  - Distributed Systems (*graduate level*)
  - Applied Deep Learning (*special topics*)
  - Intro to Web Development

Leadership and Community Engagement

Co-Founder of the Goldwater Scholar Community and Council   *Oct 2016 - present*
  Co-Founded with two scholars a national community of Goldwater Scholars of ~1000 members.
  Organized national webinars, meetups, and communications platforms such as Slack. ([link](#))
  Won a $50k grant and organized a national Goldwater Summit at NCUR.

Founder and President: Artificial Intelligence Club – *Boise State University*   *May 2018 - Aug 2020*
  Founded the [AI Club](#) to form a community of students passionate about Artificial Intelligence.
  Grown to over 180 members, and hosted 19 events including workshops, talks, and tours. Gave
    technical talks to the club. Currently serving as an advisor / mentor to the leadership.

Chair of IEEE Student Branch – *Boise State University*   *Aug 2017 - May 2018*
  Led the largest engineering student organization on campus.
  Under my leadership, the already large club grew by over 75% in membership.
  Organized 19 events, including tours of local business, invited guest speakers, and technical
    workshops - leading in enhanced connections with Boise tech companies.
  Managed club to attend the IEEE Rising Stars Conference in Las Vegas, Nevada
  Volunteered at Discover Boise State in Feb 2018

Founder of the Augmented Reality and Virtual Reality Alliance – *Boise State University*   *Oct 2016 - Aug 2020*
  Founded a startup to develop virtual and augmented reality technologies to enhance training
    programs and involvement in STEM. Originally started as a club for Boise State students.
  Won the 2017 Bronco Hackathon 48 hour coding competition ([link](#))

Honors College Peer Mentor – *Boise State University*   *Aug 2017 - Dec 2017*
  Led a discussion group as part of an Honors seminar course for incoming freshman.
  Developed weekly lesson plans, mentored students, and co-taught various ethical topics.

Co-Founder and President: International Climate Team – *Boise State University*   *Nov 2013 - Aug 2017*
  Founded [ICT](#) to build international collaboration that expands climate monitoring for improved
    and sustainable human-environment interactions.
  Developed low-cost weather stations and initiated international collaborations.
  Founded clubs at East Jr. High, Timberline High School, and Boise State University, and grown
    to host 6 chapters at universities and high schools.
  International collaboration through TAMHO with five schools in Africa and Costa Rica.

Lead Outreach to The Neighborhood Academy – *Carnegie Mellon University*   *Jul 2017*
  Organized and presented at a school serving underrepresented communities in order to inspire
    students to consider robotics and STEM in their career.

Industry Outreach for Robotics Institute Summer Scholars– *Carnegie Mellon University*   *Jul 2017*
  Organized an Industry Networking Event Night for Carnegie Mellon University Robotics Institute
    Summer Scholars (RISS) to engage with the industry community in Pittsburgh.
  Connected research students with industry leaders from companies including Discovery
    Robotics, ActiveBlu Corporation, RoadBotics, CapSen Robotics, and Ariel Medicine.

Society of Hispanic Professional Engineers Member   *Jan 2018 - Jan 2019*
  Attended the 2018 Pacific Northwest LSAMP Conference and Region 3 SHPE Leadership
    Development Conference, Emerging STEM Leaders.

Creative Technology Association Member   *Oct 2016 - June 2017*
  Active member of CTA club, which specializes in emerging technologies such as 3D printing for
    STEM engagement. Volunteered in numerous outreach activities.

FIRST Robotics Programmer   *2013 - 2015*
  Active member of team Tators for the FIRST Robotics competition.
  Won several regional competitions

Boy Scouts of America   *2009 - 2015*
  Hundreds of hours of community service to Boise residents, including annual leaf raking.
  Received the award of Life Scout, earning 17 merit badges.

Presentations

Emcee for the Boise State Scholarship Dinner   *Feb 2019*
Master of Ceremonies for the annual Boise State Scholarship Dinner: Night of Impact.
Over 500 donors and VIPs in attendance. Tweeted by the Dean of the College of Engineering.

Presenter at SemDial 2018 in Aix-en-Provence, France   *Nov 2018*
Presented my publication at the 22nd workshop on the Semantics and Pragmatics of Dialogue

Featured Presenter at Pacific Northwest LSAMP and Region 3 SHPE Conference   *Apr 2017*
Presented my research regarding multimodal grounded semantics to over 200 researchers. (link)

Boise State Scholarship Dinner Featured Speaker   *Mar 2017*
Spoke at a scholarship dinner event in front of over 600 scholarship donors, scholarship recipients, and university head faculty about my journey at Boise State.

Micron Technology Data Science Guest Speaker   *Feb 2019*
Invited to give a technical talk detailing the newest language model, BERT (Bidirectional Encoder Representations from Transformers), to the Micron Technology data science team. (link)

Honors Showcase Featured Student Speaker   *Nov 2018*
Spoke about my research experiences to potential Honors college students

Boise State Celebrate Science Earth Day Event   *Apr 2017*
Spoke about my experiences with the International Climate Team to professionals including the President of Boise State University, Dr. Bob Kustra.

Discover Boise State Honors College Featured Student   *Jan 2019*
Spoke about my journey at Boise State and led a discussion to inspire future students

Oral Presenter at Gulf Coast Undergraduate Research Symposium in Houston, Texas   *Sept 2018*
Traveled to Rice University to present my research on embodied semantics.

Oral Presenter at the Boise State Undergraduate Research Conference   *Apr 2018*
Presented my research in natural language processing to a general audience of various fields.

Poster Presentation at 2018 Research Computing Days at Boise State University   *Mar 2018*
Explained my research and how I used various computational tools to achieve my results.

Poster Presentation at West Big Data Innovation Hub Regional Conference   *Sep 2018*
Presented my research with industry professionals and networked opportunities for the AI Club

Publications & Patents (Google Scholar)

King, J. P., Bauer, D., Schlagenhauf, C., Chang, K.-H., Moro, D., Pollard, N., & Coros, S. (2018). **Design. fabrication, and evaluation of tendon-driven multi-fingered foam hands.** 2018 IEEE-RAS 18th International Conference on Humanoid Robots (Humanoids), 1–9. IEEE.

Schlagenhauf, C., Bauer, D., Chang, K.-H., King, J. P., Moro, D., Coros, S., & Pollard, N. (2018). **Control of tendon-driven soft foam robot hands.** 2018 IEEE-RAS 18th International Conference on Humanoid Robots (Humanoids), 1–7. IEEE.

Moro, D., Bern, J., & Coros, S. (2017). **Inverse Kinematics of Soft Robots using Neural Networks.** Robotics Institute Summer Scholars Working Papers Journal, 5, 112–117.

Bauer, D., Bauer, C., King, J. P., Moro, D., Chang, K.-H., Coros, S., & Pollard, N. (2019). **Design and Control of Foam Hands for Dexterous Manipulation.** International Journal of Humanoid Robotics.

Moro, D., Black, S., & Kennington, C. (2019). **Composing and embedding the words-as-classifiers model of grounded semantics.** arXiv preprint arXiv:1911. 03283.

Moro, D., & Kennington, C. (2018). **Multimodal visual and simulated muscle activations for grounded semantics of hand-related descriptions.** Workshop on the Semantics and Pragmatics of Dialogue. SEMDIAL.

Kennington, C., Moro, D., Marchand, L., Carns, J., & McNeill, D. (2020). **rrSDS: Towards a robot-ready spoken dialogue system.** Proceedings of the 21th annual meeting of the special interest group on discourse and dialogue, 132–135.

Moro, D., Caracas, G., McNeill, D., & Kennington, C. (2020). **Semantics with Feeling: Emotions for Abstract Embedding, Affect for Concrete Grounding.**

Wang, E., Davis, J. J., Moro, D., Zielinski, P., Lim, J. J., Coelho, C., … Constantinides, G. A. (2021). **Enabling binary neural network training on the edge.** Proceedings of the 5th International Workshop on Embedded and Mobile Deep Learning, 37–38.

Moro, D. (2018). **Get a Grip: Multimodal Visual and Simulated Tendon Activations for Grounded Semantics of Hand-Related Descriptions.**

King, J., Pollard, N. S., Coros, S., Chang, K.-H., Bauer, C. U., Bauer, D., & Moro, D. US Patent US20220004670A1 2022. **Flexible Manipulation Device and Method for Fabricating the Same.**

Moro, D., Coelho, C., Purser-Haskell, S., Zhuang, H., & Stan, V. WO Patent WO2022098367A1 2022. **Encoding a video frame using different compression ratios for text blocks and non-text blocks.**

Honors and Awards

Goldwater Scholar
Apr 2018

Awarded the the oldest and most prestigious national scholarship in the natural sciences, engineering, and mathematics in the United States, which seeks to identify and support college sophomores and juniors who show exceptional promise of becoming the next generation of research leaders. (link)

Computing Research Association Outstanding Undergraduate Researcher Finalist
Jan 2019

This award program recognizes undergraduate students in North American colleges and universities who show outstanding potential in an area of computing research. (link)
Featured by the Computer Science department (link)

National Science Foundation Research Experience for Undergraduates Scholarship
Dec 2018

Received an NSF Research Experience for Undergraduates scholarship to complete research at Carnegie Mellon University over the summer of 2017.

Notable Scholarships

Langroise Honors Scholarship	National Italian American Scholarship
Alumni Legacy Scholarship	Mastery Advancement Scholars
Stimpson Leadership Award	Presidential Scholarship Award

1st Place Winner - 2017 Bronco Hackathon
Mar 2017

Won best app in a 48 hour coding challenge with the 4-person team "ARVRA"
Made an augmented reality, self-paced, interactive training application. (link)

Idaho Virtual Reality Council Student Spotlight
May 2017

Featured as a student spotlight by the Idaho Virtual Reality Council. Told my story of going into computer science and virtual/augmented reality. (link)

1st Place IEEE Student Cybersecurity Contest
Oct 2017

Won 1st place in a cybersecurity challenge at the Institute of Electrical and Electronics Engineers Region 6 Area Meeting (link)

IEEE Xtreme Competitor
Oct 2018

Competed in a global 24 hour programming competition, IEEE Xtreme.
Ranked 37th place in the United States.

Hackathon Finalist
Aug 2018

Won Honorable Mention in South Park Commons 24 hour Hackathon.
Worked with 3 students to build a social platform to share and place notes in AR

Distinguished Piano Player
2009 - 2016

Superior Rating in Keyboard Gymnastics (2012), 2nd Place in Sonatina Festival (2012), Certificate of Excellence Honors Recital (2013), Superior Rating in National Federation of Music Club's Festival (2013), Superior Rating in Certificate of Merit (2014).

Personal Projects and Creative Activities

Peeps: AI Personal Assistant
Nov 2018 - Dec 2019

Built chatbot to help one manage professional networks and search complex relationship graphs.
Built a website for the chatbot and created an AI web crawler that uses information retrieval techniques to extract information about a person given only their name. (link)

Cellular Automata Project
Aug 2018 - present

Created an ecosystem simulation by combining cellular automata and machine learning.
Complex patterns emerge from simple agents controlled by neural networks

Cunning Capitalist Board Game
April 2014 - present

Created a strategic tabletop board game where players build and invest in startups in an effort to make it to the top of a risky market. Currently play-testing, with plans to publish the game.