Brandon Abranovic, Ph.D.

Research Scientist and Machine Learning Engineer
Tel: send email if needed
brandon@abranovic.com | LinkedIn
U.S. and E.U. Citizenship

Skills

Tools and Languages: Python, Git, SQL, TensorFlow, PyTorch, PySpark, NumPy, Scikit-learn, OpenCV, Matplotlib, AWS, Docker, Kubernetes, Jira, Jupyter, Anaconda, LaTeX, MATLAB, ANSYS Mechanical, APDL
Fluent in English, Italian, and Spanish.

Areas of Expertise

- SciML/Physics-Driven Learning
- ML4Eng
- Anomaly Detection
- Computer Vision
- Natural Language Processing
- Applied Deep Learning
- Finite Element Simulation
- Additive Manufacturing/ DfAM
- Project Management

Experience

Polymath AI, San Francisco, CA
Co-Founder & Chief Technology Officer — *Jan 2025 - Present*

- Lead development and deployment of an AI-driven engineering change control tool to eliminate repeated work, streamline change control meetings, and simplify version control.
- Develop and execute strategies for customer discovery, commercialization and fundraising.

Relativity Space, Long Beach, CA
Machine Learning Scientist — *Jan 2023 - Jan 2025*

- Developed a CNN-based short-feed detection model with 98% accuracy, a video anomaly detection system using ConvLSTM, and surrogate models for adaptive control in AM, significantly reducing downtime and material costs.
- Engineered a VGG-based 3D mesh distortion model, reducing project risk and securing a $2M milestone.
- Integrated Docker and Argo workflows, enhancing model deployment and scalability.
- Led technical project management, creating and maintaining detailed project plans covering scope, schedules, budgets, and resource allocation.
- Aligned all projects with requirements, ensuring milestone achievement through program completion.
- Presented ML initiative progress to C-suite leadership and company-wide at all-hands meetings.

NASA, Huntsville, AL
Research Associate — *Summer 2017*

- Conducted research in material and physical property characterization of 3D-printed metal lattices.
- Supported propulsion system design efforts for additive manufacturing of propulsion components.

Autodesk, San Francisco, CA
Fusion Catalyst Intern — *Co-Op 2016*

- Led 3D CAD design and fabrication of complex geometries and provided technical support and training for students and university faculty.

Apple, Cupertino, CA
AppleCare Intern — *Co-Op 2015 - 2016*

- Supported Mac and iOS devices and users.

Education

Carnegie Mellon University
Master of Science, *Mechanical Engineering*, 2018 to 2021 Verify CeDiD: 21R2A4GWBFC4
Doctor of Philosophy, *Mechanical Engineering*, 2018 to 2022 Verify CeDiD: 23JK6WU7B1CS

- Thesis: Machine Learning Enabled Process Monitoring & Process Development Across Additive Platforms.
  - Developed ML techniques for process monitoring in additive manufacturing, leveraging acoustic, image, and video data to enhance flaw detection and process stability.
  - Applied advanced ML models for parameter schemes and predictive analytics, improving part quality and efficiency in laser hot wire and powder bed fusion processes.
- **Minor Concentration in Machine Learning**: MSML core curriculum.

Arizona State University
Bachelor of Science in Engineering, *Chemical Engineering, 2014 to 2018*

- NIAF Intel Scholar, Filomena J. Peloro Scholar, President's Scholarship, Dean's List.

Publications available on Google Scholar and conference talks available on request