Christos Margadji

Department of Engineering
Trumpington Street
Cambridge

Education

University of Cambridge, PhD in Engineering
October 2022 – Present

- Thesis title: 3D Deep Learning for 3D Printing
- Supervisor: Dr. Sebastian Pattinson (Computer-aided Manufacturing Group)
- Advisor: Pr. Alexandra Brintrup (Supply Chain Artificial Intelligence Lab)
- Teaching experience: supervised 4 × theses for MPhil in Machine Learning and Machine Intelligence.

Imperial College London, MSc in Artificial Intelligence
September 2021 – September 2022

- Taught modules result: Distinction (summa cum laude, top in cohort)
- Thesis: Physics-informed neural networks in additive manufacturing (grade: 86%)
- Supervisors: Pr. Andrew Davison, Dr. Paul Hooper

University of Birmingham, BEng in Mechanical Engineering
September 2017 – June 2021

- Degree result: First Class Honours (summa cum laude, top in cohort)
- Dissertation: Characterising the nanoparticle emissions released from 3D Printing
- Supervisors: Dr. Jose M. Herreros, Pr. Athanasios Tsolakis

Professional Experience

Materials Division, Lawrence Livermore National Laboratory (LLNL)
Research Intern
July 2023 – October 2023

Engineered an AI-powered simulation engine (multi-physics and multi-process compatibility).
- Up to 27% reduction in spatiotemporal complexity for solving various PDE problems
- Minor losses in accuracy, range in 5-10%
- Compatible with distributed computing (multiple nodes and environments), deployed on one of LLNL's supercomputers
- Complemented by a user-friendly frontend for effortless utilization by AI / HPC non-experts.

Security Division, International Business Machines (IBM)
Intern
June 2019 – June 2020

- Retrieved and distributed intelligence between teams of the Security Division.
- Handled 250+ critical cases, always with efficiency and on a timely manner.
- Worked with Python, C++ and JavaScript for dashboard and API development.

Certified Professional AI Engineer. Experience with: PyTorch, TensorFlow, Keras, Jax, PyG, OpenCV, Pandas, MongoDB, SQL, Oracle, Azure, AWS.

| National Guard of Cyprus | July 2015 – January 2017 |
| Second Lieutenant | |

- Special forces training in Crete, Greece followed by fourteen months of service as an officer designate in Nicosia, Cyprus.
- Accounted for the control, maintenance and administration of a military company based in 4 major outposts within the UNFICYP buffer zone.
- Dealt with multiple crisis situations in a high-pressure environment.
- Honourably promoted to 2nd lieutenant for excellent service in September 2016.

Research

Conferences, Seminars & Invited talks

- Physics-informed neural networks in metal laser powder bed fusion. Advanced Materials and Manufacturing Seminar, LLNL (San Francisco, California, January 2023.)
- Scaling quality assurance in manufacturing via transfer learning. PhD Conference, Institute for Manufacturing (Cambridge, UK, May 2023.) Best poster award.
- Iterative learning for control. PPG Seminar, University of Cambridge (Cambridge, UK, June 2023.)
- Transfer learning for efficient mass production. Supply Chain AI Lab (SCAIL), University of Cambridge (Cambridge, UK, November 2023.)
- Iterative Learning for Efficient Additive Mass Production, 35th Solid Freeform Fabrication Symposium (Austin, Texas, August 2024.)

Publications

- **Margadji, C.**, Brion, D. A. J., & Pattinson, S. W. (2024). Iterative learning for efficient additive mass production. Additive Manufacturing, 89, 104271.
- Zou, M., Guo, H., Zhang, Q., Wang, H., Ji, Z., **Margadji, C.**, Samson, K., Kuswoyo, A., Scarpa, F., Saed, M., & Pattinson, S. W. (2024). Elastic shear-stiffening composites with locally tunable mechanics for protection and damping. *Applied Materials Today*, *40*, 102396.

Supervised theses

A world model of the 3D printing environment, S. Jefimovs. 2023.

A vision-language model as embodied manufacturing agent, Junyi Qian, 2024.

Modelling Additive Manufacturing Processes via Graph-Conditioned Diffusion Models, Rupert Menneer, 2024.

Super-Resolution for Thermal Imaging in Manufacturing, Ranjith Mamatha Sheshadri Gowda, 2024.

Accolades

- EPSRC Doctoral Training Partnerships studentship award
- Institution of Mechanical Engineers (IMechE) award
- Ellis, Linning, and Sandifer Prize
- J. Brown (Machining) award