Dr. Constantinos Katsamis

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Education

01/2018-/01/2022 The University of Manchester: Ph.D in Mechanical Engineering

- Fully funded PhD from University of Manchester Scholarship and EDF on **"CFD (Computational Fluid Dynamics) Modelling of Passive Cooling Natural Circulation Loops".**
- Developed strong research and analytical skills through conducting bespoke compute demanding numerical simulations that actively contributed to research project goals and collaborated closely with EDF UK R&D team.
- Strengthened numerical and analytical skills through developing advanced methods on turbulent flows related to the cooling systems of nuclear reactors and strong coding skills by implementing them in open-source CFD software tool (*code_saturne*).
- Analysis high dimensional data and provided inform decisions to the research and nuclear community by fulfilling the research objectives within timelines (thesis, publishing scientific papers).
- Possess strong communication skills through presenting in national, international conferences and 3 SIG workshops (>15).

09/2015 – 06/2017 University of Cyprus: M.Sc. in Mechanical and Manufacturing Engineering

- Collaborate effectively with peers for coding the numerical solution and performing thermodynamic cycle optimization of canonical flow problems in F90 and Matlab within the course of Computational Fluid Mechanics and Numerical Methods.
- Mastered commercial software in CFD (ANSYS-Fluent), and UDF programming in C for conducting simulations for my thesis **"Thermal management of High Concentrated Photovoltaic" (Distinction).**
- Developed strong numeracy, problem solving and analytical skills when interpreting the data and optimizing the design.

09/2012 – 06/2015 The University of Manchester: BEng (Hons) in Mechanical Engineering

- **Indicative Modules:** Engineering Mathematics, Fluid Mechanics, Thermodynamics, Dynamics, Modelling and Simulation, Design, Numerical Methods, Project Management, Control Engineering, Heat transfer, Operations Management, Renewable Energy Systems.
- Conducted wind tunnel experiments to assess the effects of incorporating wind turbines on residential house' roofs for the dissertation on **"Use of flow around buildings for energy generation".** Enriched design skills using CAD tools and 3D printing to optimize the models' design and interpreted the data generated.

Work and research experience

09/2023 –present Research CFD Engineer- Thermal Hydraulics – EDF R&D UK

- Time and budget management of the programme of work for the CFD team. Led projects and monitor progress of contract work. Guided Research Associates and junior engineers within the team, co-supervising MSc/PhD students at the University.
- Developed advanced models and perform numerical simulations for flow dynamics and thermal effects, analysing the generated high dimensional data using data science techniques to drive decision making and provide solutions to support the safe operation of EDF reactor fleet. Contributed to the GO-Viking Horizon European project, a 4-year long research project aimed at further advancing the knowledge of fluid-structure interaction and multiphase flows.
- Developing software using many programming languages, implementing new features, migrating product versions, using version control, containers, coupling codes with in-house CFD software, automation to deploy tools and use of macros to accelerate the process of delivering products to end-customer.
- Collaborating closely and establishing relationships with research institutes on the promotion and development of CFD open source codes and methods. Closely working with software developers of the EDF, acting as liaison between UK and France.
- Learning and extending technical skills through certified trainings to meet forthcoming challenges eg. data science for machine learning, analysing high fidelity data, data cleaning and exploration, developing regression, classification algorithms, synthesize data, Neural Networks, databases, automation techniques including API and webscraping.

04/2022 –09/2023 Research IT – Research Computing Platforms - University of Manchester

- Experienced with Linux OS System Administration on the High Performance Computing (HPC), High Throughput Computing and Research Data Storage infrastructure of the University and Cloud (AWS).
- Developed strong analytical thinking and problem-solving skills through correcting malfunctions, software installations to support researchers to run high fidelity simulations on the clusters. Ensured effective client communication and satisfaction.

- Enhanced conceptual thinking and broaden understanding of software tools through debugging, developing automation tools for repetitive tasks and ways to accelerate machine learning applications on Nvidia GPU (engaged with a researcher to develop a CFD model on active flow control with Deep Reinforcement learning with ANSYS/Cuda/Python/tensorFlow).
- Delivered HPC training, products and services to researchers across the whole University. Explore the use of R and python including linear, logistic regressions, classification, and clustering for projects with real life datasets.
- Collaborated daily with Research software engineers and developed training courses to support the teaching of running open-source CFD tools and data science on the clusters. Experienced version control, continuous integration and deployment (CI/CD) for an online platform, developing front-end environment and backend.

09/2018 –03/2022 Teaching Assistant -Associate Fellow of the Higher Education Academy at The University of Manchester

- Instructed the main principles of Fluid Mechanics to 20 1st year undergraduates using fluid flow visualization experiments.
- Organized and demonstrated practical Computation Fluid Dynamics and Advanced Thermodynamics both lab and tutorial sessions for 2nd, 3rd year and MSc students (20-80), assisted them to interpret correctly the data generated and troubleshoot the software.
- Developed leadership skills by co-supervising MSc/final year students who successfully fulfilled their project requirements.

07/2021-01/2022 CFD researcher at Modelling and Simulation UK Centre (EDF Energy)

- Provided consultation and decision making though developing an advanced 3D CFD model to assess the effects of turbulent forced convection in the cooling fluid passages to support the safe operation of nuclear power plants.
- Developed control engineering skills by implementing PID control algorithm in EDF's in-house CFD code (code_saturne) and conducted expensive simulations to analyse the effects of debris in fluid passages.
- Enhanced time management skills to fulfill the deliverables and objectives of the project (report, poster, presentations).

09/2015 -06/2017 Teacher Assistant for the course of Thermal Engines at the University of Cyprus

- Tutored 35 undergraduates for 2 semesters and organised, solved, and effectively presented the course material.
- Provided additional support and mentored undergraduates with disabilities.
- Ensure smooth running of the lab session and marking the assignments.

01/2016 – 07/2016 Graduate Trainee - Electromechanical Sector in Cyprus - Ministry of Transport, Communications and Work

- Designed and involved in the consultation of the building services for providing quotations, inspecting sites and support government target for nearly zero energy buildings by 2020.
- Developed awareness and knowledge of engineering systems and their operation including, air handling units and solar collectors for providing decisions to the stakeholders in accordance with standard norms.

Skills Training Certifications and Interests

- **Language**: English (Fluent) | Greek (Native) | German (Basic) | French (A2 learner)
- **Engineering software:** CFD (StarCCM+)| CAD (Salome, Solidworks) | Paraview (Visualisation) | 3D-printing (Cura)
- **Operating systems**: Windows | LINUX (Centos 7, Scientific Linux, Debian, Arch).
- **Programming and Libs**: Python (Functional, Asychronous (Basic) and OPP, ML using TensorFlow and Keras, opencv, NumPy, Pandas, Scikit learn, Apache Spark, Seaborn and ML pipelines) | Bash | Java | FORTRAN F90 | Git/Github/Gitlab | Bash | $LATEX$ (publications) | CSS/Javascript/HTML (website development)| yaml | DataBricks| Markdown | SQLite (developed UI database).
- Proficient in Microsoft Office/365: Teams, Excel, PowerPoint, Word- (Certificate European Computer Literacy Qualification) and Azure for Cloud HPC.
- Institution of Engineering and Technology (IET) member Elsevier Reviewer (Computer and Fluids).
- Self-learning through mini-projects, task manager programs, Rasperry-Pi programming arcade min-games in Python/C/C++.
- Travelling, exploring the world and getting ideas to 3-D print.