Ioannis **Nikiteas**

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Education

PhD in Computational Nuclear Physics
London, UK

IMPERIAL COLLEGE LONDON
Jan. 2019 – PRESENT

- Researched and authored algorithms for error estimation used in multidimensional adaptive mesh refinement
- Wrote performant and scalable algorithms for massively parallel architectures (ARCHCER & ARCHER2 HPCs)
- Performed advanced data visualisation of multidimensional data
- Software developer at FETCH2 and Fluidity , using Fortran, C, C++ and Python
- Funded via Imperial College, Cambridge University & Open University (ICO) CDT and **Jacobs Engineering**

MSc in Advanced Nuclear Engineering
London, UK

IMPERIAL COLLEGE LONDON
Sept.2017 – Sept.2018

- Obtained knowledge and developed skills on the fields of Material Science, Nuclear, Mechanical and Chemical Engineering
- Thesis on Dynamic Load balancing on angular adaptive mesh refinement for radiation transport.

BSc in Experimental Physics
Egham, UK

ROYAL HOLLOWAY UNIVERSITY OF LONDON
Sept. 2014 – May. 2017

- Graduated with 1st Class Honours
- Obtained fundamental skills for analysing and solving problems in the fields of Physics and Mathematics
- Dissertation title: Investigating the transition from Molecular Dynamics to Smoothed Particle Hydrodynamics

International Baccalaureate Diploma
Athens, Greece

THE MORAITIS SCHOOL
2012 – 2014

- Overall Score 36/45 with; Physics HL: 7/7, Math HL: 6/7, Chemistry SL: 5/7

Awards & Scholarships

SCHOLARSHIPS

2017	**Alexander S. Onassis Public Benefit Foundation**, Scholarship for academic excellence £13,000	*Athens, Greece*

Experience

Senior Software Engineer & Analyst
London, UK

TOFFEEX
Dec. 2022 – PRESENT

- Single-handedly lead the development of software products for reverse engineering of complicated, organic 2D and 3D meshed geometries to NURBS and CAD models
- Work on the development of CFD and topology optimisation software products
- Work on advanced geometry modelling, meshing and CAD software products
- Work on commercialising an automated system for the solution partial differential equations using the finite element method (FEM) as part of an EPSRC grant with Imperial College London
- Setup and maintain the CI, CD and testing pipelines for the core products of the company
- Work on the development of a cloud-based platform for the deployment of the software products (SaaS)
- Responsible for enforcing software engineering best practices and improving code quality of the codebase
- Work in an AGILE environment, with emphasis on collaborative practices

Fortran-lang – The Fortran Programming Language
London, UK

ADMIN – MAINTAINER
Oct. 2022 – PRESENT

- Administrator of the **Fortran-lang** organisation & maintainer of the projects under the **Fortran-lang GitHub** organisation
- Author and principal developer of **fortls** Language Server for Fortran & **Modern Fortran for Visual Studio Code** extension
- Org Admin, supervisor and mentor for the **Google Summer of Code** program, for multiple projects
- We secured a €800,000+ grant from the **Sovereign Tech Fund** to develop new open-source tools for Fortran-lang projects (package managers, package registries, compilers, high level APIs to linear algebra libraries, etc.)

StudentShapers Placement - Research Computing and Data Science Exemplars (ReCoDE)
London, UK

IMPERIAL COLLEGE LONDON
Jul. 2022

- Reviewed, edited and improved Computational & Data Science projects targeted at training PhD candidates in their fields of study
- Worked on 5 projects in vastly different fields: Computer Vision & Convolutional Neural Networks, Nuclear Engineering using Diffusion theory, Physics modelling using Markov Chain Monte Carlo, RNA sequencing of biological data, COVID-19 Transmission modelling using Bayesian inference
- Worked with various programming languages: Python, Fortran, R, STAN

Graduate Teaching Assistant *London, UK*

<small>IMPERIAL COLLEGE LONDON</small> *Dec. 2018 – Dec. 2022*

Taught various principles of programming, linear algebra, numerical methods and computational modelling to both final year Undergraduate students and Master's students:

- Module: 375 Advanced Programming C++
- Module: ACSE-5 Numerical methods with C++
- Module: ACSE-6 Parallel Programming using MPI

Intern Engineer, Maintenance of Alumina, Non-Invasive Testing Methods *Viotia, Greece*

<small>ALUMINIUM OF GREECE</small> *July. 2016 – Aug. 2016*

- Was part of a team responsible for the optimisation and maintenance of equipment used in the production of aluminium oxide (alumina).
- Was familiarised with methods and techniques used to investigate for structural failures in industrial equipment.
- Performed non-destructive testing (e.g. Ultrasonic testing, liquid penetrant, eddy-current testing, remote visual inspection).

Projects

Gmsh Fortran API *London, UK*

<small>AUTHOR – MAINTAINER</small> *Sep. 2022 – PRESENT*

- Author and maintainer of the Python autogenerated Fortran API for the popular **Gmsh** meshing library
- Author and maintainer of the Fortran Package Manager module **gmsh-fpm allowing** for easy access to the API via Fortran

Load balancing for adaptive radiation transport simulations *London, UK*

<small>M.SC. THESIS</small> *Feb. 2018 – Sep. 2018*

- Studied the use cases between spatial and angular discretisation methods e.g. FDM, FEM, FVM, DGFEM, S_n, P_n and wavelets
- Wrote a report on the application of global and goal based adaptive methods on transport problems
- Benchmarked, improved and optimised existing code in FETCH2 for load balancing of radiation transport problems

Investigating the transition from Molecular Dynamics to Smooth Particle Hydrodynamics *Egham, UK*

<small>B.SC. DISSERTATION</small> *Sept. 2016 – Apr. 2017*

- Investigated the existence of a continuous transition between Molecular Dynamics (MD) and Smooth Particle Hydrodynamics (SPH) by creating computational models in C++ and Python
- Used Statistical Mechanics e.g. RDF, VAF, MSD, to make quantitative observations for the transition limits between the two models
- A continuous transition between MD and SPH was discovered, for the first time, for a small range of parameters of the pair potential

Publications

Load balancing angular adaptivity on energy dependent reactor problems

<small>NIKITEAS, IOANNIS, DARGAVILLE, STEVEN, SMITH, PAUL N. SMEDLEY-STEVENSON, RICHARD P. PAIN, CHRISTOPHER C.</small>

EPJ Web Conf. 247 (Feb. 2021) p. 03025. 2021

Reentrant melting and multiple occupancy crystals of bounded potentials: Simple theory and direct observation by molecular dynamics simulations

<small>I. NIKITEAS, D. M. HEYES</small>

Phys. Rev. E 102 (4 Oct. 2020) p. 042102. American Physical Society, 2020

Impact of load balancing on parallel performance with Haar wavelets angular adaptivity

<small>I. NIKITEAS, S. DARGAVILLE, C. C. PAIN, P. N. SMITH, R. P. SMEDLEY-STEVENSON</small>

International Conference on Mathematics and Computational Methods Applied to Nuclear Science and Engineering, (M&C 2019), 2019

Bounded inverse power potentials: Isomorphism and isosbestic points

<small>I. NIKITEAS, D. M. HEYES</small>

J. Chem. Phys 150.14 (Apr. 2019) p. 144504. American Institute of Physics Inc., 2019

Skills and Inerests

Programming	Python, C/C++, Fortran, TypeScript, Bash and many more…
Other Software	Git, LaTeX, Markdown, Microsoft Office, Inkscape, FreeCAD, GMSH, Logger Pro 3
Languages	English, Greek, French
General Skills	Communication, Leadership, Multidisciplinary Teamwork, Risk assessment, Report authoring, Experimental design
Interests	Coding, Interactive data visualisation, Active member of the Fortran Programming Language Orgnanisation, Chess