Zhendan Shang

Str. Penes Curcanul Nr. 14 Bl. A Ap. 49 Bucharest Romania

+447477372692; zhendanshang@gmail.com

PROFESSIONAL PROFILE

Motivated, Curious and Challenge driven student with predicted Distinction in MSc Applied Computational Science and Engineering from Imperial College London and 2:1 Honours in BSc Geophysics from Imperial College London, and with experience in fieldworks, research, projects, volunteering, and teaching, with teamwork, communication, time management and research skills

RESEARCH EXPERIENCE

UROP Imperial College London   **Summer 2018 and Summer 2019**

- Ran CFD simulation for the multiphase chemical differentiation, cold storage, and remobilization of magma in the earth's crust using Fortran 95, based on code from Jackson et al. (2018) * and tested general robustness of the new code with increased number of features and parameter

- Cross validated the model in Jackson et al. (2018) * against datasets from Ivrea, Kohistan and Famatina and found good fit between simulation and reality, under the supervision of Prof. Matthew Jackson.

Fujian Earthquake Agency Research Intern   **Summer 2019**

- Used Python for quantitative analysis of seismological, petrological and satellite data to investigate the tectonics, magmatism and evolutionary history of Fujian, Taiwan and surrounding Ryukyu Islands and Philippines since Mesozoic

- Proposed a new evolutionary model based on new evidence and previous studies to explain the local geology composed of granitic rocks, a metamorphic zone and crustal thinning

UROP Imperial College London   **Summer 2020**

- Used Python to write lecture notebooks for Numerical Methods I and Numerical Methods II for the undergraduate Geophysics course, including topics in numerical analysis and boundary value problems involving PDE and stream functions, under the supervision of Prof. Matthew Piggott.

Graduate Teaching Assistant   **March 2021 – April 2021**

- Worked as teaching assistant for the Advanced Programming module for MSci Geophysics students coordinated by Prof. Stephen Neethling, teaching and explaining C++ concepts for data science and simulation purposes

TECHNICAL SKILLS

- Languages: Mandarin (Native), English (Native), Romanian (Native), French (Basic)

- Programming Language: Proficient in Python, Fortran 95, and C++

- Proficient in Microsoft Office, Photoshop, GIMP, Inkscape

- Proficient in scipy, matplotlib, pandas, openMP and MPI, Beginner in PyTorch

- Proficient in FDM, FVM, FEM, inversion, and optimization methods

- Studying ML Regression and Classification and unsupervised Clustering and PCA

*Jackson, M. et al. (2018). Chemical differentiation, cold storage and remobilization of magma in the Earth's crust. *Nature*, 564(7736), pp.405-409.

EDUCATION

MSc Applied Computational Science and Engineering **September 2020 - Present**

- Wrote MPI code to simulate wave equation with grid decomposition and custom boundary conditions, and benchmarked the code on multi node 64 core HPC to achieve up to 90% parallelism

- Wrote Python code to simulate the effect of the atmospheric on meteorite trajectory impact during impact assessment group project and wrote visualization code during flotation circuit group project

- Wrote Python code for the inversion and optimization of the discretized Helmholtz equation

- Detailed description of the modules can be found at https://acse-2020.github.io/

BSc Geophysics Imperial College London **September 2017 – September 2020**

- Year I project "On the Possibility of Terrestrial Organism Surviving Upon Hellas Planitia": Discussed the possibility of extremophile organisms surviving and thriving on the most favourable Martian environment possible and proposed a modification of Viking lander for carrying out the experiment to test if the number of such organism would increase during Martian summer

- Year I fieldwork in Charnwood, Dorset, Alicante (SE Spain): Mapping and Interpretation of local geology; investigated the local orogenies due to closing of the Mediterranean, history of local mining industries, the effect of sea level change on geology and various other geological features

- Year II fieldwork in Cyprus: Ran Gravity, Magnetics, Conductivity, Seismic, Resistivity surveys; produced subsurface models, delivered presentation on our daily findings, and finally submitted a 3500-word report that summarized and synthesized the results of various methods.

- Year II coursework: Simulated the heat radiation from a given heated body using Newton's law of heat transfer; proposed and tested new body design for improved heat radiation or insulation

- Year II project: "Future of Coal Mining in China": Investigated the conflicting interest of different stakeholders from various social classes in the changes to the Chinese coal mining industry and made a presentation that outlined personal informed predictions about the evolution of Chinese energy mix, change of resource imports and improvements in automation

- Year III project: "Using Seismic Moment Tensor and Kostrov Method to investigate the plate tectonics of southern China and Taiwan". Designed an automated Python code to present suggestions of earthquake clusters, to quickly calculate strain, strain rates and plate velocities of suggested earthquake cluster to help understand the local stress regime and risk assessment

- Year III project: "Full Waveform Seismic Inversion in Oil and Gas". Produced a professional level technical report based on inaccurate and incomplete geophysical data and drew conclusions and asserted associated uncertainties arising from the geophysical data.

INTEREST AND ACTIVITES

Imperial College London, Exhibition Road Festival **July 2019**

- Presented to the public the various components of remote sensing satellite, various theories of Venus evolution, humanity's past and future missions to Venus and the implications of Venetian evolution

Imperial College London, Planetarium Ambassador **November 2018 – Today**

- Delivered planetarium shows to primary school children, explaining in simple manner the newest development and discoveries of planets (Mars, Jupiter, Saturn), moons (Titan, Enceladus, Dione) and galaxies and helped cultivate in children an essential curiosity in STEM

Imperial College London, Pimlico Connection, Volunteer **October 2017 – June 2018**

- Helped and supported school children from Year 4 and Year 5 in their studies about STEM, inspiring local children to succeed and reach their academic potential

References available upon request