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Oliver Sheldon

EXPERIENCE

AWE

Computational Physicist *02.2023-Current*

Designing and developing modern, high-performance C++ and Python codes for applications in many-particle physics.

- **Python**
  - Delivering highly performant Python codes that focus on maintainability, simplicity, and testability.
  - Utilizing skills in UX/UI design to develop intuitive and user-friendly GUI (using Tkinter) and CL interfaces.
  - Developing APIs with modern RESTful paradigms to provide effective and dependable code interfaces for clients.
  - Collated and presented user feedback to product owners to gain insight for future deliverables and design discussion.
- **C++**
  - Developing low-level, next-generation, high performance codes targeting CPU and GPU architectures with CUDA.
  - Consolidated specialist parsers under one coherent, modular library. Codebases combined to maximize code reuse.
  - Led research efforts to modernise areas of code such as JSON schema, pseudo-RNG, and convergence analysis.
- **Testing and DevOps**
  - Spearheaded test-driven development and design-by-contract programming within Agile paradigm.
  - Accelerated code robustness with detailed analysis of unit and end-to-end tests, achieved by extensively analysing issues; Findings were presented to product owners, guiding design discussions with focus on modern best practices.
  - Modernised deployment methods, automation of code verification and validation using continual integration pipelines.
  - Supported design discussions with R&D tasks to guide large projects into smaller, more manageable issues.
- **Collaboration**
  - Effective collaborator in international code partnership, representing and steering feature prioritization towards our requirements. Achieved through remote working and in-person coding trips to the United States.
  - Presented workflow innovations, facilitated through my contributions to code interfaces, to code user base.

EDUCATION

University of Warwick

Computer Science MSc *09.2021-09.2022*

Grade: Merit

- **Agent Based Systems (Artificial Intelligence):** Designed, developed, and evaluated agents through topics such as game theory, opponent modelling, and knowledge representation, in competitive and cooperative agent interaction.
- **High Performance Computing:** Leveraged understanding of advanced computing resources to optimize computational workflows with a focus on C++ programming and GPU utilization. Achieved exceptional performance outcomes.
- **Algorithm Design:** Completed tasks utilizing concepts of algorithm design, complexity, and mathematical and statistical methods. Adapted these algorithms to create powerful models to analyse, and predict cryptocurrency markets.
- **Data Mining:** Deployed machine learning models for regression and classification problems, utilizing deep learning tools such as convolutional neural networks using TensorFlow/PyTorch. Determined optimal pipeline for classification and produced convolutional neural network for cell images regression task, achieving 93% in this open-ended work.
- **Advanced Computer Security:** Utilized theory to solve classical and modern crytography (PKI), system security, hardware security, network security, and blockchain problems in a Linux virtual machine using the C language.
- **Image and Video Analysis:** Produced solutions for computer vision tasks such as image recognition, motion estimation, denoising, feature recognition and tracking using tools such as neural networks, OpenCV, SIFT, and KD-Trees.
- **Social Informatics:** Designed digital systems and delivered a comprehensive GUI as part of a team.
- **Dissertation Project:** Applications of Machine Learning for imaging data compression.

University of Lancaster

Theoretical Physics BSc Hons *09.2018-07.2021*

Grade: First-class honours, achieving first-class marks in all exams.

SKILLS

• C++	• C	• SDLC	• API Design	• OOP	• SQL
• Python	• Bash	• Unit Testing	• Git	• HDF5	• CMake
• JavaScript	• Agile	• TDD	• GitLab	• Linux	• Excel

AWARDS

University of Lancaster

British Science Association Gold Crest *03.2017-02.2018*

- Collaborated with a team of researchers to remotely co-author a published research paper.
- Discovered and analysed patterns in large datasets, and engaged with research papers as part of a team.
- Communicated our findings by presenting to an audience of experts, for which I receieved my award.