Ibrahim Alhas

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Personal Statement

A driven and versatile Software Engineer with extensive experience in Software Engineering, AI, Game Development, open-source contributions, and management of full end-to-end software life-cycles. My experience spans from dynamic start-ups to large-scale research projects, emphasising my adaptability to diverse technical challenges. Lately served as Lead/Senior Software Engineer on an interdisciplinary AI research project, responsible for feature design, implementation, bug resolution, and continuous codebase enhancement, while working in collaboration with researchers, Ph.D. students, and external contributors to drive project forward.

Experience

Lead/Senior Software Engineer   **Jan. 2024 – Dec. 2024**
University of Cambridge, Leverhulme Centre for the Future of Intelligence   Cambridge, UK

- Directed the technical development of an interdisciplinary AI and psychology research project, integrating sophisticated algorithms and systems while driving continuous feature improvements.
- Co-authored a published research paper, with significant contributions to software development, validation, testing, data curation, and writing (review & editing).[1]
- Facilitated bi-weekly and monthly project meetings to align team efforts, conceptualize stakeholder requirements, address challenges, and define actionable milestones, while regularly making critical technical decisions.
- Mentored junior researchers and developers through in-depth code reviews, enhancing code quality and ensuring adherence to best software development practices.

Software Engineer   **Jan. 2023 – Dec. 2023**
University of Cambridge, Leverhulme Centre for the Future of Intelligence   Cambridge, UK

- Led the entire development lifecycle as the sole full-time engineer, managing architecture design, implementation, rigorous testing, and debugging to ensure long-term stability and performance for a prominent open-source project.
- Simultaneously managed Python and C# codebases with Agile methodology, integrating and optimising core application algorithms within Unity game engine to ensure seamless functionality and cross-compatibility across platforms.
- Designed, published, and maintained a Python package on PyPI, streamlining distribution, version control, and documentation for ease of use by internal and external developers.
- Wrote comprehensive original project documentation across multiple repositories which reduced on-boarding time for new collaborators by 50%, improving project maintainability and reducing recurring issues.
- Developed and deployed a Unity (WebGL) application hosted on AWS, leveraging Elastic Beanstalk, RDS, and S3 to ensure scalability and system performance, while integrating a Django and Python backend to enable researcher data collection, manage databases, and support customizable user interaction configurations.
- Conceptualized and managed the release of multiple application versions to rapidly gather user feedback and implement data-driven enhancements, resulting in a 37% increase in active users within one year.
- Enhanced codebase efficiency by 60% by optimizing core functionality, significantly reducing code complexity while improving scalability, stability, and overall performance.
- Developed and maintained a robust suite of unit, integration, and end-to-end tests for both Python and C# codebases, whilst also utilising GitHub CI/CD for automated testing, reducing validation time by 50%.

Intern Software Engineer   **Aug. 2022 – Dec. 2022**
LAIIER | Bare Conductive Ltd   London, UK

- Contributed to the development of sophisticated back-end proprietary software solutions using Python and PostgreSQL in a dynamic start-up environment.
- Authored detailed, clear, and highly readable technical documentation for each solution worked-on, facilitating better understanding and efficient use by both technical and non-technical stakeholders.
- Developed a robust Python end-to-end testing framework for the primary codebase, still in active use, and designed over 60 unit and integration tests to ensure code reliability and maintainability.

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[1] https://arxiv.org/abs/2312.11414

Education

King's College London   **Sep. 2019 − Aug. 2022**

Master of Science in Artificial Intelligence · *with Merit (top 10% in cohort)*   London, UK

Thesis: *"Fact or Fiction Classification with Machine Learning & NLP"* · *with Distinction (top 15% in cohort)*

University of Westminster   **Sep. 2015 − Aug. 2018**

Bachelor of Science (Hons) in Computer Science · *with Distinction (top 20% in cohort)*   London, UK

Thesis: *"An Investigation on the Use of Virtual Reality in Education"* · *with Distinction (top 14% in cohort)*

Personal Projects

Computer Game: 'ItLivesInTheWoods' [Game Link] | *Unreal Engine 5, C++, Git*
- Scheduled for commercial release in Q2 2025.
- Written optimized C++ code to deliver efficient game performance, consistently improving frame rates for a smooth gameplay across a wide range of hardware and specifications.
- Managing marketing and publication efforts, including creating and maintaining a Steam Store game page, engaging with potential players, and preparing for the game's post-launch lifecycle.

Technical Skills & Technologies

Computer Science:
- Strong foundation in algorithms, data structures (e.g., BFS, Hash Tables, Heaps), and theoretical concepts such as Automata and Information Theory.

Programming:
- Proficient in Python, C#, and C++ with real-world experience in both open-source projects and enterprise-level applications.
- Expert in Object-Oriented Programming, adhering to WaterFall & Agile methodologies (Scrum and FDD).
- Original publisher and active maintainer of a widely used open-source PyPI package.

Database Stack:
- Hands-on experience in relational databases such as PostgreSQL and MySQL.

Code Management:
- Skilled in writing efficient, scalable code with expertise in debugging, automated testing, and code maintenance.
- Proficient in Git, GitHub & GitLab for version control and CI/CD workflows.
- Hands-on experience with Docker for application packaging and deployment.

Game Development:
- Extensive experience developing in Unreal Engine and Unity, with a focus on scalable AI systems and NPC behaviors using techniques such as behavior trees.
- Skilled in game performance optimization, including memory management and frame rate enhancement.

Artificial Intelligence:
- Proficient in AI frameworks like TensorFlow, PyTorch, Keras, and Scikit-learn.
- Experience in data processing and visualization with NumPy, Pandas, and Matplotlib.
- Specialized knowledge in Generative AI technologies, including LLMs (e.g., ChatGPT, Llama).

Machine Learning Algorithms:
- In-depth knowledge of a variety of machine learning algorithms, including Neural Networks, Support Vector Machines, k-Nearest Neighbors, Linear Regression; Decision Trees. Also knowledgeable with Reinforcement Learning algorithms such as DQN and PPO.

Mathematical Theories:
- Solid foundation in Calculus, Probability, Statistics, Linear Algebra, and Optimization techniques critical to AI and machine learning.
- Proficient in analyzing algorithm complexity, including Big O notation and complexity analysis.

Cloud/Web Technologies:
- Skilled in deploying and maintaining scalable applications on AWS (Elastic Beanstalk, S3, and RDS).
- Hands-on experience in Django, HTML5, CSS, and React for full-stack web development.
- Experienced in REST (Django) and RESTFUL APIs.

Additional Tools & Languages:
- Proficient in Windows, Linux and macOS operating systems for development and deployment.

Additional Information

References & Other: References available upon request; Right to live and work in the UK (British Citizen)

Language Skills: Native in Turkish, Fluent in English, Beginner in French and Spanish