PATRICK LEE

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EDUCATION

UNIVERSITY OF BRISTOL   Bristol, UK
Computer Science MEng (hons)   2:1   Sep 2020 - Jul 2024
Dissertation on computational modelling of closed-loop stimulation treatments for Dystonia (mark of 78%)
Modules on cyber-security, machine learning, high-performance computing and computational neuroscience

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WORK EXPERIENCE - TECHNICAL

UNIVERSITY OF BRISTOL BIOMEDICAL SCIENCES DEPT.   Bristol, UK
Research Developer   Jul 2023 – Apr 2024

- Successfully designed and implemented React Native mobile app which, operated via a UI, uses audio-based hardware to provide stimulation as part of experimental treatment for Dystonia
- Built a custom Expo module to directly interact with Android's audio and vibration features
- Performed debugging, both within Expo and at the lower Android layer
- Prioritised writing performant and testable code that can be easily maintained by other researchers
- Worked collaboratively in an interdisciplinary team with various neuroscientists
- Used feedback from patients to drive product development and provided support in using the software
- Successfully parallelised software for the running of neuro-stimulation experiments, resulting in a 6x speedup
- Implemented cutting-edge algorithms for EEG signal processing and tracking of neural oscillations
- Introduced features which utilise patient-worn hardware to track head movement and changes in posture

Tech: Python, Typescript/Javascript, Kotlin, Expo, React Native

KEYPIN   Warrington/Remote, UK
Lead Engineer | https://keyp.in | Code available upon request   Sep 2022 – Jun 2023

- Was wholly responsible for development of a web platform within a small start-up team, building both the frontend (Vue JS) and backend API (Symfony) from the ground up
- Focussed on test-driven development using the PHPUnit library
- Set up cloud resources for the project and designed relational database schemas
- Implemented basic security measures including strict input validation, password encryption and SSL certificates
- Worked collaboratively with a designer and a project lead
- Incorporated feedback from initial users into additional features and improvements to user interface

Tech: PHP, Typescript/Javascript PostgreSQL, Symfony, Vue JS, Doctrine ORM

UNIVERSITY PROJECTS

CLIMATE ARCHIVE - WEB PLATFORM (Java, Spring, HTML/CSS, Javascript)   Oct 2021 - Apr 2022

Collaborated using the AGILE methodology to add improvements to our client's web platform, designed to help other researchers easily access and visualise past climate data. We successfully developed a back-end to serve this data as well as adding various features to the front-end, such as graphing and animations. We adapted well to changing requirements and delivered a quality software product which our client was happy with and that is now maintained open-source.

IMMERSIVE RHYTHM GAME (C++, C#, Python, Unity, Team Project)   Jan 2023 - May 2023

Successfully delivered a video game as a team of 6, implementing a number of flagship technologies including a custom-built MIDI drum controller and a novel procedural tree growth algorithm. My focus was on gameplay development and overseeing CI/CD - performing code reviews and integrating changes from other team members onto the main branch, ensuring we had an up to date working version at the end of each 5 day period.

EMBEDDED AES - ATTACKS AND COUNTERMEASURES (C, Python, UART)   Jan 2023 - May 2023

Implemented AES encryption software for a micro-controller and created an efficient hardware-based key recovery attack against it. Also designed and implemented effective counter-measures for this attack using permutations and masking techniques. Wrote a comprehensive specification considering further threats and counter-measures for other functionality required in TLS communication. Overall this project received a mark of 76%.

TECHNICAL SKILLS

Languages: C/C++, C#, Python, Java, Javascript, Typescript, PHP, HTML, CSS, SQL

Tools & Frameworks: Git, React Native, Symfony, Vue JS, PostgreSQL, Doctrine, Figma, Postman, Spring

OTHER WORK EXPERIENCE

BREWHOUSE & KITCHEN	Front of House	May 2022 - Aug 2022
MORRISONS	Warehouse Picker	Apr 2020 - Aug 2020
VAIL RESORTS (WHISTLER BLACKCOMB)	Ski Instructor - Level 1 CSIA	Nov 2019 - Apr 2020
MOE JOE'S NIGHTCLUB, WHISTLER	Security	Feb 2020 - Apr 2020
ROBERT'S BAKERY	Factory Worker	Sep 2019 - Nov 2019
MANLEY MERE	Lifeguard/Watersports Instructor	Apr 2017 - Sep 2019

PERSONAL BACKGROUND

- Active sportsman - enjoyed playing rugby and rowing at schoolboy level - including both team captaincy and GB Trials for rowing
- Keen musician - played piano and saxophone to grades 5 and 7 respectively
- Part-time DJ / event organizing as part of a collective started with university friends. Have played at small festivals and venues in Bristol (whilst building a large vinyl collection)