Nick Sullivan

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About Me

Senior Software Engineer (Ph.D.), specialising in scaling small companies through fit-for-purpose solutions that balance long-term growth with immediate business needs. Experienced in solution design, back-end development (Python/C#), cloud infrastructure (AWS), front-end technologies (React) and algorithm design. Recognised for an open-minded, honest, and candid approach to problem solving. Learn more about me on my website.

Employment

2024-2025

Senior Software Engineer

Bactobio - *A London BioTech startup discovering new chemical compounds to fight disease*

- Collaborated with bioinformations and scientists to discover requirements, design solutions, and enhance research using automation and data visualisation.
- Developed web application pages for scientists to upload, view, and edit research data, with queue based autoscaling for on-demand research analysis (e.g., mass spectroscopy).
- Modelled complex biological and chemical domains, ensuring support for both new and legacy data and processes.
- Kubernetes, Python, Oracle, SQLAlchemy, React, Typescript, Playwright

2021-2024

Senior Software Engineer

Tiimely - *A FinTech scale-up automating responsible lending*

- Mentored software and quality assurance engineers in clean code principles and best practices through code reviews, pair programming, and technical whitepapers.
- Navigated immediate business needs while driving strategic migration from legacy software to scaleable, configurable APIs.
- Architected technical solutions and led an engineering team throughout key projects, such as scaling loan servicing APIs to achieve 60% reduction in server costs, 40% reduction in cyclometric complexity, and 90% reduction in development time.
- C#, AWS, MSSQL, React, Typescript, Playwright, Terraform

2019-2021

Software Engineer / Team Lead

MaxMine - *A MiningTech scale-up reducing greenhouse gas emissions with automated analysis*

- Promoted to Technical lead after two years, recruiting, managing and mentoring a team of five engineers.
- Designed and implemented an Analytics Data Store that reduced ad-hoc analysis time from hours to seconds, enabling faster decision making.
- Developed algorithms for haul route optimisation, operator performance gamification, and material tracking, leading to client improvements such as 75% decrease in tyre spend, 16% reduction in truck queuing, and compliance with safe driving practices.
- Reverse engineered communication protocols used by Komatsu and Hitachi to discover new data sources, unlocking load unit orientation capabilities and improving material tracking quality.
- Introduced data testing frameworks, processes, and dashboards, significantly improving data quality and client confidence.
- Python, AWS, Terraform, Matlab, dbt, Snowflake, pandas

2016-2019

Software Engineer

The University of Adelaide

- Enhanced the Australian Olympic track cycling team's pacing through an automated laser guided pacing system.
- Developed autonomous capabilities of small sensor-laden vehicles used in defence research.
- Tutored fourth year engineering courses: Advanced PID Control and Advanced Digital Control.
- Python, C++, ROS, Matlab

Education

2016-2019 | **Ph.D. in Robotics**

The University of Adelaide

Researched novel methods for task allocation and collaborative localisation in ground vehicles, designing algorithms to optimise objective completion while maintaining line-of-sight constraints.

- Presented research at ACRA 2017, ACRA 2018, and ICARCV 2018, as well as to Australia's Minister for Defence Industry and Chief Defence Scientist.
- Published four journal papers to top quartile journals.

2010-2015 | **B.Eng. in Mechatronics and Comp Sci (Hons)**

The University of Adelaide

- 6.5/7 GPA.

Certifications

2021 **AWS Certified Solutions Architect - Associate**

Publications

N. Sullivan, **Task Allocation and Collaborative Localisation in Multi-Robot Systems**, *Ph.D Thesis*, 2019

N. Sullivan, S. Grainger, B. Cazzolato, **Analysis of cooperative localisation performance under varying sensor qualities and communication rates**, *Journal of Robotics and Autonomous Systems*, 2018

N. Sullivan, S. Grainger, B. Cazzolato, **Sequential Single-Item Auction Improvements for Heterogeneous Multi-Robot Routing**, *Journal of Robotics and Autonomous Systems*, 2019

N. Sullivan, S. Grainger, B. Cazzolato, **A dual genetic algorithm for multi-robot routing with network connectivity and energy efficiency**, *International Conference on Control, Automation, Robotics and Vision* (ICARCV 2018)

N. Sullivan, S. Grainger, B. Cazzolato, **Algorithms for Multi-Robot Routing with Adaptive Heterogeneity**, *Journal of Heuristics*, 2018

N. Sullivan, S. Grainger, B. Cazzolato, **Formation-based multi-robot routing with inter-robot distance constraints**, *European Journal of Operational Research*, 2018

N. Sullivan, G. Pearce, S. Grainger, B. Cazzolato, **An outdoor multi-vehicle platform for collaborative localisation research**, *Australasian Conference on Robotics and Autonomation* (ACRA 2018)

N. Sullivan, S. Grainger, B. Cazzolato, **Robot heterogeneous multi-robot routing for low-intelligence agents**, *Australasian Conference on Robotics and Autonomation* (ACRA 2017)

Hobbies

Basketball, travelling, wine tasting, and coding recreationally. Some notable projects include a smartphone app that overlays QR codes on GIFs, a realtime multiplayer dice game, and an autonomous ground vehicle. See my website for more information.
Hobbyist-level technical skills: Flutter, Rust, AstroJS, Godot, Raspberry Pi, Web scraping