Nick Sullivan

nick.dave.sullivan@gmail.com
github.com/Nick-Sullivan
nickdavesullivan.com
linkedin.com/in/nick-dave-sullivan

About Me

Fullstack software engineer (Ph.D.). I specialise in scaling small companies with technical design and inter-team processes. Proficient in back-end software (Python/C#), cloud infrastructure (AWS), front-end software (Typescript) and algorithm design. Known for being open-minded, honest, and candid. Explore my blog and projects on my website.

Employment

2024-2025 | **Senior Software Engineer**

Bactobio *is a London BioTech startup that discovers new chemical compounds to fight disease.*

- Worked closely with bioinformations and scientists to discover requirements, design solutions, and implement improvements to research using automation and data visualisation.
- Create web application pages for scientists to upload, view, and edit research data, with queue based autoscaling for on-demand research analysis, such as mass spectroscopy.
- Modelled complex biological and chemical domains, supporting new and legacy data and processes.
- Kubernetes, Python, Oracle, SQLAlchemy, Typescript, Playwright

2021-2024 | **Senior Software Engineer**

Tiimely *is a FinTech scale-up that automates responsible lending practices for home-loans.*

- Mentored software & quality assurance engineers in clean code principals and best practices through code reviews, pair programming, and whitepapers.
- Balanced tactical decisions for immediate business outcomes with a strategic migration from a monolithic architecture to microservices using domain-driven development.
- Recognised that an existing service would not scale to meet the business strategy, redesigned and convinced the business to prioritise the project, and led a team of engineers in implementation. This reduced cyclometric complexity by 40% and resulted in 60% reduction in server costs and 90% reduction in development time for new features.
- C#, AWS, SQL, Typescript, Playwright

2019-2021 | **Software Engineer / Team Lead**

MaxMine *is a MiningTech scale-up that reduces greenhouse gas emissions with automated analysis.*

- Technical lead after two years, where I recruited, managed and mentored a team of five.
- Led the design and implementation of an Analytics Data Store, which reduced ad-hoc analysis time from hours to seconds, providing access to faster decision making.
- Created algorithms such as haul route optimisation, operator performance gamification and material tracking. This led 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, which unlocked the ability to determine load unit orientation and improved the quality of the material tracking product.
- Introduced data testing frameworks, processes, and dashboards which significantly improved data quality and client confidence.
- Python, AWS, Terraform, Matlab, dbt, Snowflake, pandas

2016-2019 | **Software Engineer**

The University of Adelaide

- Improved the Australian Olympic track cycling team's pacing through an automated laser guided pacing system.
- Enabled autonomous operation of small sensor-laden vehicles for 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 new methods for task allocation and collaborative localisation for ground vehicles; designing algorithms that decide how individuals should complete their objectives, while remaining within line-of-site of one another.

- Presented my research at conferences 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.
Hobbyiest-level technical skills: Flutter, Rust, AstroJS, Godot, Raspberry Pi, Web scraping