



# Daniella Tola

## Summary

Software engineer with PhD in robotic systems integration and hands-on experience developing ML, computer vision, and ROS2 systems in manufacturing. Excels at systems thinking by rapidly understanding complex technical and operational challenges across diverse domains (manufacturing, pharmaceuticals, agriculture) to architect innovative solutions. Technical expertise spans algorithm development, hardware-software integration, and deploying models on edge devices using Python. Demonstrated leadership through mentoring teams, driving technical decisions, proposing innovative solutions (including patent-assessed work), and building strong client relationships. Known for methodical problem-solving, raising team standards through knowledge sharing, and rapid adaptation to new domains.

📍 Melbourne, VIC

🌐 [daniellatola.au](http://daniellatola.au)

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### Citizenship:

Australian and Danish

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### Languages:

English (mother tongue)

Danish (fluent)

Assyrian (proficient)

Arabic (conversational)

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### Transferrable Skills:

Project management

Public speaking

Systems thinking

Adaptable

Collaborative

## Relevant Work Experience

### 2024/10 - Present, Robotics & ML Engineer (Data Scientist) at Trifork

#### Key Responsibilities:

- Development of ML and computer vision production code for object detection in different domains: train tracks and signals, manufacturing
- Design and implement ROS2 nodes and software architecture decisions
- Interface software with industrial camera systems and edge computing hardware (Jetson)
- Contribute to the software pipeline including annotation, testing, CI/CD, and deployment

#### Achievements:

- Proposed novel computer vision solutions within first week of current project, one assessed for patent potential by client
- Built strong client relationships resulting in direct client request for continued project engagement despite relocating from Denmark to Australia
- Worked across the full stack from algorithm development through deployment in fast-paced prototyping environment

### 2024/04 - 2024/09, Postdoc at Aalborg University with Novo Nordisk

#### Key Responsibilities:

- Conceptualise novel aseptic factory layouts for optimising low volume small batch production
- Conduct interviews with domain experts to inform design decisions
- Analyse complex requirements including cleanroom standards (cleanroom class A), low-volume specialised production, and cost optimisation

#### Achievements:

- Methodically broke down vast requirement sets into manageable decision frameworks
- Generated innovative layout concepts by drawing insights from diverse unrelated domains

## Leadership, Mentoring, and Communication

### Technical Leadership

- Became PM's go-to adviser for technical strategy and decision-making (*Trifork*)
- Drove system design evaluations and proactively identified project risks (*Trifork*)
- Conducted knowledge-sharing sessions focused on learning from mistakes and technical challenges, building a culture of psychological safety and organisational learning (*Trifork*)
- Led development of KPIs for quantitative layout comparison (*Novo Nordisk*)
- Facilitated workshop with domain experts on exploration of conceptual layouts (*Novo Nordisk*)

### Technical Communication

- Engaged 500+ robotics developers through research survey; open-source dataset achieved 37k+ views and 3.9k+ clones
- Invited speaker at Silicon Valley Robotics, Danish Academic Society of Robotics, IEEE RAS Hyderabad Chapter
- Guest lecturer representing Trifork at Danish Technical University ML summer course
- Adapted communication style for diverse audiences: PhD researchers, industry professionals, and complete beginners

### Teaching and Mentoring

- Assistant Lecturer, Aarhus University (Jan - Dec 2025): Redesigned lecture materials with real-world examples and step-by-step explanations, resulting in positive student feedback. Supervised two semester group projects
- Volunteer Instructor, ReDI School (2024-2025): Taught Python to women and non-binary individuals from migrant/refugee backgrounds, adapting approach for learners with no mathematical background
- PhD Teaching and Supervision (2020-2023): 25 ECTS across discrete mathematics, programming, game technologies. Supervised 1 B.Eng. thesis and 1 intern
- Student Mentor, Aarhus University (Feb 2017 - Sep 2019): Helped students with diverse learning needs, providing individualised support and coaching on specialised learning techniques and study strategies

## Education

### 2020/11 - 2023/10, Ph.D. in Robotics with Danish Company Technicon, Aarhus University

Study abroad period (September-December 2022) at Queensland University of Technology in Australia with Distinguished Professor Peter Corke. The Ph.D. was in collaboration with the Danish system integrator, Technicon, on optimising **robotic systems integration** processes via a robotic systems configurator, developing digital shadows of robotic systems, and researching the de-facto standard robot modelling format, URDF.

### 2018/08 - 2020/06, M.Sc. in Computer Engineering, Aarhus University

Student exchange period (September-January 2019) at Katholieke Universiteit Leuven in Belgium with focus on automation and control. Specialisation in Machine Learning, Computer Vision, and Embedded Devices. Thesis on agricultural machinery safety. Finished with a GPA of 11.2/12.0.

### 2015/02 - 2018/06, B.Eng. in Electronics, Aarhus University

Thesis on building a vertical farming cabinet system. Finished with a GPA of 10.5/12.0.

## Selected Technical Skills

### Programming Languages

- C
- C++
- C#
- Python
- MATLAB
- VDM (Formal modelling)

### Robotics and Visualisation

- ROS/ROS2 (node development, real-time systems)
- Sensor integration (mainly cameras)
- Embedded systems and edge computing (NVIDIA Jetson)
- Visualisation and Simulation:
  - ◊ Gazebo
  - ◊ URSim
  - ◊ URDF
  - ◊ Unity
  - ◊ Blender

### Machine Learning and Computer Vision

- Current focus: Object detection models including YOLO, TAO, and MMDetection
- Annotation: Darwin, LabelStudio, MVTec Deep Learning Tool
- Python libraries: pandas, polars, ultralytics, roboflow, sklearn, opencv, matplotlib, keras

### Development Tools

- Google Cloud
- UpCloud
- Git
- Docker
- Atlassian
- CI/CD
- Tailscale

### Systems Engineering

- SysML
- UML
- Digital Twins
- Enterprise Architect

## Publications

### Selected From 10+ Publications ([View Full List](#))

- D. Tola and P. Corke, "Understanding URDF: A Survey Based on User Experience," in *2023 IEEE 19th International Conference on Automation Science and Engineering (CASE)*, 2023, pp. 1–7. DOI: [10.1109/CASE56687.2023.10260660](https://doi.org/10.1109/CASE56687.2023.10260660)
- D. Tola and P. Corke, "Understanding URDF: A Dataset and Analysis," *IEEE Robotics and Automation Letters*, vol. 9, no. 5, pp. 4479–4486, 2024. DOI: [10.1109/LRA.2024.3381482](https://doi.org/10.1109/LRA.2024.3381482).
- D. Tola, E. Madsen, C. Gomes, L. Esterle, C. Schlette, C. Hansen, and P. G. Larsen, "Towards Easy Robot System Integration: Challenges and Future Directions," in *2022 IEEE/SICE International Symposium on System Integration (SII)*, 2022, pp. 77–82. DOI: [10.1109/SII52469.2022.9708846](https://doi.org/10.1109/SII52469.2022.9708846)

## Open Source Contributions

- **URDF Dataset:** Curated [dataset](#) of 300+ robot models from diverse sources, supporting robotics research and development. 37k+ views, 3.9k+ clones.

## Selected Volunteer Experience

### 2022/12/06-08, Assistant at Australasian Conference on Robotics and Automation

Managed registrations, assisted with audiovisual setups, and helped out with the food service.

### 2016/11 - 2017/08 (Part-time), Tutor at "Red Barnet" (Save the Children) Ungdom

Helped middle school students with their homework, with special focus on mathematics and physics.