



# Daniella Tola

## Summary

Software engineer with PhD in robotic systems integration and hands-on experience applying ML, automation, and safety across manufacturing, pharmaceuticals, and agriculture. Strength in systems thinking: rapidly understanding complex workflows across diverse industries and architecting practical solutions. Combines technical depth in ML, computer vision, and ROS with strong client communication and teaching experience. Known for methodical problem-solving and innovative thinking.

## 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
- Capture, annotate, train, and deploy complete pipeline for ML systems

#### 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
- Proposed multiple value-adding solutions to client beyond original project scope
- Initiated knowledge-sharing sessions focused on learning from mistakes and technical challenges, building a culture of psychological safety and organisational learning

### 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 interview with domain experts to inform design decisions

#### Achievements:

- Led development of KPIs for data-driven layout comparison
- Broke down system models conceptually using Enterprise Architect
- Contributed strategic insights quickly despite being new to pharmaceutical domain
- Facilitated workshop with domain experts on exploration of conceptual layouts

## 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.

## Communication & Stakeholder Engagement

### Technical Communication

- Engaged 500+ robotics developers through research survey; open-source dataset achieved 33k+ views and 3.7k+ 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 (2025-Present): Redesigned lecture materials with real-world examples and step-by-step explanations, resulting consistently in positive student feedback
- PhD Teaching and Supervision (2020-2023): 25 ECTS across discrete mathematics, programming, game technologies. Supervised 1 thesis, 1 intern, 2 semester 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

📍 Melbourne, VIC

## Citizenship:

Australian and Danish

## Languages:

English (mother tongue)  
Danish (fluent)  
Assyrian (proficient)  
Arabic (conversational)

## Transferrable Skills:

Project management  
Public speaking  
Systems thinking  
Adaptable  
Collaborative  
Technical Leadership

## 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. 33k+ views, 3.7k+ 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.

## Selected Technical Skills

### Programming Languages

- C
- C++
- C#
- Python
- Answer Set Programming
- VDM (Formal modelling)

### Robotics and Visualisation

- ROS/ROS2
- Gazebo
- URSim
- 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