# Wei-Chen Li

 ▼ Taiwan
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#### **Education**

## **National Taiwan University**

Sept 2022 - Aug 2024

MS in Mechanical Engineering

o GPA: 3.93/4.0

Thesis title: Extension of compressive sampling for eddy current 3D reconstruction PDF

### **National Taiwan University**

Sept 2017 - June 2021

*BS in Mechanical Engineering*○ GPA: 3.96/4.0 (Rank: 3/142)

#### **Publications**

- W. C. Li and C. Y. Lin, "Extension of compressive sampling to binary vector recovery for model-based defect imaging,"
   Under review. PDF
- ∘ <u>W. C. Li</u> and C. Y. Lin, "Sparse magnetic array for the imaging of defects in multilayer metals," *IEEE Sensors Journal*, vol. 24, no. 9, pp. 14082-14092, 2024. PDF 

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- <u>W. C. Li</u> and C. Y. Lin, "Unit interval vector recovery from sparse measurements for eddy current defect imaging," In
   *The 21th International Conference on Automation Technology*, 2024. PDF
- C. Y. Lin, <u>W. C. Li</u>, H. T. Chen and Y. L. Chen, "Inverse modeling based on eddy current sensing for reconstruction of conductivity distribution," In *The 19th International Conference on Automation Technology*, 2022. PDF

## **Experience**

#### **Full-time Research Assistant**

Aug 2024 – present

Mechatronics and Intelligent Automation Research Lab, National Taiwan University

- Developed a comprehensive framework for recovering binary vectors from underdetermined systems of linear measurements
- Proved the NP-hard nature of the problem and designed approximate solvers using convex optimization and Bayesian inference
- o Applied the framework to various measurement modalities for defect tomography imaging

Research Assistant

July 2022 – June 2024

Mechatronics and Intelligent Automation Research Lab, National Taiwan University

- o Proposed an algorithm based on variational inference for binary vector recovery from linear measurements
- Apply the method to model-based eddy current defect imaging, improving sampling efficiency
- o Implemented a mixed integral-differential method called "distributed current source" to model eddy currents

Teaching Assistant Sept 2022 – June 2023

Department of Mechanical Engineering, National Taiwan University

- Assisted in teaching Dynamics and Automatic Control course
- Assigned and graded homeworks assignments and exams while holding regular TA sessions

**Engineering Intern**Mar 2022 – June 2022

**Techman Robotics** 

- o Developed graphical user interface for robotic systems product
- o Built a robot simulator using the product of exponentials formulation

Private Sept 2021 – Feb 2022

**ROC Army** 

Conscription military service

Student Researcher July 2020 – Jan 2021

Robotics Lab, National Taiwan University

- o Port monocular SLAM to an Android phone
- o Integrated camera and IMU data for navigation in GPS-denied environments

## **Awards and Honors**

HIWIN Best Master's Thesis Award (3000\$ prize)	2024
Best Paper Award (Second Prize), The 21th International Conference on Automation Technology	2024
Professor Lung-Wen Tsai Memorial Scholarship	2024
Best Paper Award (Third Prize), The 19th International Conference on Automation Technology	2022
Presidential Award (top 5% in grades) for 5 semesters, Department of Mechanical Engineering, National Taiwan University	2017 – 2021

## **Skills**

Programming: C++/C, Python, MATLAB, Julia, ŁTĘX

Toolkit: ROS, PyTorch, Git, Altium Designer, Autodesk Inventor

# **Knowledgeable methods:**

	General	Graphs	Controls	Neural networks
Probabilistic	Variational inference,	Probabilistic graph-	State estimation	DDPM, VAE
	MCMC	ical models (Belief	(Kalman filter, Par-	
		propagation)	ticle filter)	
Convex opti-	ADMM, Interior-point	Graph of convex sets	Optimal control (LQR,	-
mization			DDP, MPC)	