

Ng Kian Wei

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EDUCATION

- Ph.D. Candidate**, Electrical and Computer Engineering *Aug '21 – Present*
Select Coursework: Pattern Recognition, Deep Learning, National University of Singapore
Adv. Topics in Vision and Machine Learning, Visual Computing
- B.Eng.**, Electrical Engineering (Highest Distinction) *Aug '17 – May '21*
Artificial Intelligence & Data Engineering Industry Track National University of Singapore

EXPERIENCE

- Data Scientist** – *National University Health System* *May '21 – Present*
- **Managed** technical **research and development** for Holomedicine programme across the healthcare cluster, with national and international collaborations
 - Brought several computer-vision driven mixed-reality solutions from **conceptualization to development and trials**
 - Authored academic peer-reviewed publications and filed for provisional patents
 - Provided supervision for interns and capstone students
 - Assisted in other technical research and development projects addressing a wide range of clinical requirements
- Data Engineering Intern** – *N.1 Institute for Health* *May '19 – Aug '20*
- Developed **data processing pipeline** for large-scale datasets on compute clusters
 - Performed multimodal statistical analysis, including integrating data streams and unsupervised clustering using dataset recorded in both real world and virtual experimental setups
 - Developed various interactive data visualization and manipulation tools for spatial and temporal data
 - Implemented ROS-based system for **experimental robotic platform**, with automated data collection
- Signal Processing Intern** – *Acoustic Research Laboratory, TMSI* *Jun '18 – Jul '18*
- Developed tools to visualize and automate analysis of acoustic recordings
 - Analyzed data using various metrics to differentiate/filter for episodic event acoustic signatures

TEACHING

- Teaching Assistant** – *Faculty of Engineering, NUS* *Jun '20 – Nov '20*
- Involved in setting up course materials and provided weekly consultations for a new Data Engineering module catered to engineering undergraduates
 - Set up and tested data processing cluster on AWS ParallelCluster, integrating Slurm and Bash scripts
- Teaching Assistant** – *School of Computing, NUS* *Aug '18 – Dec '18*
- Planned and conducted weekly laboratory sessions, consultations, and grading
 - Covered introductory programming methodology and basic applications, taught in Python and C
 - Received above average evaluation and feedback from surveyed students regarding teaching performance

PROFESSIONAL ACTIVITIES & AWARDS

Memberships / Affiliations

- **Member** -- Immersive Reality Lab, Engineering Design & Innovation Centre, NUS *Aug '21 – Present*
Ph.D. Candidate working on the intersection between computer vision, mixed-reality and human computer interaction for medicine.
- **Founding Member** – Holomedicine® Association *May '21 – Present*

Medical and Scientific Evidence Working Group
Education and Training Working Group

Seminars / Workshops

- **Facilitator** – EG3301R Workshop, Engineering Design & Innovation Centre, NUS *Jul '22*
Conducted physical hands-on workshop for applied computer vision using OpenCV and MediaPipe, for engineering undergraduates.
- **Invited Speaker** – Society for Brain Mapping and Therapeutics (SBMT) 2022 World Congress *Mar '22*
Virtual seminar on “Object tracking and Computer Vision in HoloLens”
- **Invited Speaker** – 7th AKU Annual Surgical Conference, Pakistan *Feb '22*
Virtual seminar on “Future of Data Science in the field of Surgical Research”

Media Releases

- **News Article** – The Straits Times *May '23*
“Augmented reality tech to deliver faster ultrasound scan results, help with surgical planning”
- **News Article** – The Straits Times *Dec '21*
“NUHS testing AI, AR to help locate hard-to-find veins in some patients”

Scholarships / Awards

- **Scholarship** – Professional Engineers Board Gold Medal *Aug '20*
Awarded in final year of undergraduate studies, for strong academic performance and a proven track record of participation in extra-curricular activities.

TECHNICAL SKILLS

Languages: Python Bash MATLAB C# (Basic) SQL (Basic)
Select Frameworks: OpenCV PyTorch Open3D Kivy (Basic) ROS (Basic) Unity (Basic)

PUBLICATIONS

Kian Wei Ng, Yujia Gao, Mohammad Shaheryar Furqan, Zachery Yeo, Joel Lau, Kee Yuan Ngiam, Eng Tat Khoo. “HoloPOCUS: Portable Mixed-Reality 3D Ultrasound Tracking, Reconstruction and Overlay” In 4th International Workshop of Advances in Simplifying Medical UltraSound (ASMUS), Held in Conjunction with MICCAI 2023.

Kian Wei Ng, Mohammad Shaheryar Furqan, Yujia Gao, Kee Yuan Ngiam, Eng Tat Khoo. “HoloVein—Mixed-Reality Venipuncture Aid via Convolutional Neural Networks and Semi-Supervised Learning.” In Electronics, 2023.