Gang Cao

Qualification and Professional Development

- **Doctor of Philosophy (PhD)** in Electrical Engineering — January 2013 – March 2017
  School of Engineering and Advanced Technology
  Massey University, Auckland, New Zealand
- **Master of Engineering** in Control Theory & Engineering — September 2008 – April 2011
  Faculty of Automation and Information Engineering
  Xi'an University of Technology, Xi'an, China
- **Bachelor of Engineering** in Electrical Engineering & Automation — September 2004 – June 2008
  School of Mechanical and Electrical Engineering
  Xi'an University of Architecture & Technology, Xi'an, China

Career History

Software Research AI Team Lead	Tomra Fresh Food	08/2021 – Now
Applied Research Scientist (Lead AI Scientist)	Tomra Fresh Food	12/2019 – 07/2021
Research Scientist	PlantTech Research Institute	09/2019 – 12/2019
Artificial Intelligence Software Developer	Tomra Fresh Food	08/2017 – 09/2019
Teaching Assistant	Massey University	03/2013 – 11/2015
Research Assistant	Xi'an University of Technology	01/2009 – 06/2012

Research & Development Experience

- **Predictive throughput control of sorting turnkey line** — June 2021 – Now
- **AI algorithms and solutions for optical sorting machines** — August 2017 – August 2020
- **AI ImageData library development** — August 2017 – Now
- **Data driven soil model for intelligent agriculture** — January 2017 – February 2017
- **Machine learning intelligent control** — January 2013 – January 2017
  - Fast and stability-guaranteed probabilistic intelligent control algorithm of unknown dynamical systems
  - Fast linear and nonlinear optimization algorithms using linearized GP models
  - Stochastic optimization algorithms using swarm intelligence
  - Probabilistic data-driven modelling algorithm of unknown dynamical using machine learning
  - Autonomous control of quadrotors using machine learning and probabilistic MPC
  - Trajectory tracking control of quadrotors using machine learning and probabilistic MPC
  - Matlab toolbox "**gpmpc**": Gaussian Process Model Predictive Control
  - Matlab toolbox "**cgps**": Convolved Gaussian Processes
- **Ladle furnace (LF) process control system** — January 2010 – September 2012
  - ***2012 Shaanxi Provincial Science and Technology Award***
  - ***2012 Science and Technology Award of Higher Education of Shaanxi***
  - LF process control and data management system
  - Mechanical performance prediction model using machine learning
  - Molten steel temperature prediction model machine learning
  - Alloy addition prediction model using mathematical modelling and expert system
  - Data acquisition tool using Siemens OPC server
- **Monocrystalline silicon refining process control system** — August 2009 – December 2009
- **Tunnel boring machine (TBM) PLC control system upgrade** — July 2008 – October 2008

Computer Skill

- PyTorch, TensorFlow, Darknet, OpenCV, Deepstream, Keras, TFLearn, Scikit-learn, SciPy, PyCaret, GPyTorch
- DVC, Weights & Bias; Git, SVN; Matplotlib, Streamlit, Plotly
- Python, Matlab, C, C++, Shell,CUDA, SQL; Linux; VS Code, Qt, Vim; LaTeX

Selected Awards

- Finalist of 2020 NZ Hi-Tech Award in Most Innovative Hi-Tech Agritech Solution (LUCAi Engine Development)
- 2018 Tomra Value In Practice (VIP) Award
- 2012 Shaanxi Provincial Science and Technology Award
- 2012 Science and Technology Award of Higher Education of Shaanxi