Yen Kai

Principal Scientist

: (+XX) XXXXXXXX | : cwcyenk@yahoo.com.sg | : linkedin.com/in/yen-kai

PROFILE SUMMARY

Seasoned Research Scientist with over 28 years of experience in wireless communications, driving innovation across academia, industry, and government-funded initiatives. Recognized for delivering award-winning technologies, securing multimillion-dollar grants, and solving complex signal processing challenges through cutting-edge algorithm design. Adept at building and leading cross-functional teams to translate advanced research into practical, high-impact solutions.

- Expertise in baseband receiver design, joint source-channel decoding, and BER optimization
- Proficient in C and Python for simulation and prototyping of advanced communication systems
- Strong track record of collaboration with international research institutions and industry partners
- Demonstrated leadership in securing major grants and leading strategic R&D efforts across satellite, maritime, and terrestrial systems

SKILLS & COMPETENCIES

Hard Skills

- **Key technologies**: 5G/6G, Non-Terrestrial Networks (NTN), VDES, signal processing
- **Key programming languages**: C, Python (TensorFlow, Keras, Numpy, SciPy), MATLAB (Simulink, LabVIEW)
- **Scientific writing & publishing**: Reports, presentations, peer-reviewed papers, Latex expert
- **Grant writing & funding acquisition**: Securing research grants, proposal writing

Soft Skills

- Problem-solving and critical thinking
- Verbal and written communication
- Cross-functional collaboration and teamwork
- Adaptability and flexibility
- Time management and organization

PROFESSIONAL EXPERIENCE

Institute for Infocomm Research (I^2R), A*STAR *October 1996 - March 2025*
Principal Scientist II

- Secured a SG$2M Future Communications Programme (FCP) 1.0 research grant focused on 5G/6G-based Non-Terrestrial Networks (NTN) for emergency communications in Singapore
- Played a key role in developing a VHF Data Exchange System (VDES) transceiver prototype—among the first of its kind globally—which received two national awards for innovation in maritime connectivity
- Secured and led a SG$1M grant project funded by OSTIn to design advanced baseband receiver algorithms that improved processing efficiency for satellite imagery applications
- Independently developed joint source-channel decoding algorithms in collaboration with a multinational corporation, resulting in an order-of-magnitude BER improvement and a 3 dB PSNR enhancement in wireless image transmission
- Served as a visiting researcher at the Center for Wireless Communications in Oulu, Finland, where a novel iterative joint-over-antenna detection technique was developed, achieving a 3–4 dB improvement in BER
- Contributed to numerous cross-sector projects spanning time synchronization in wireless time-sensitive networks, ultra-wideband radar for vital sign detection, and other emerging wireless technologies

EDUCATION

University of Southampton, U.K. (2001)
Doctor of Philosophy (Ph.D.) in Wireless Communications
- Thesis: Genetic algorithm-assisted CDMA multiuser detection

Nanyang Technological University, Singapore (1996)
Bachelor of Engineering (B.Eng) in Electrical and Electronics Engineering (1st class honours)

AWARDS

- Public Service Division Long Service Medal (2022)
- Outstanding Maritime R&D and Technology Award (2019)
- Ministry of Transport Minister's Innovation Award (2018)
- Best Presentation in Session in IEEE International Conference on Signal and Image Processing (2017)
- National Science & Technology Board (NSTB) Postgraduate Scholarship (1997)

CERTIFICATIONS

- Patent Landscaping for Evaluating IP Significance of R&D Outcomes - IPOS (2023)
- Responsible Conduct of Research – CITI Program (2022)
- **Artificial Intelligence Nanodegree – Udacity** (2020)
- Numerous certificates in Data Science and AI/ML – Linkedin Learning

REFERENCES

- Available upon request.