Junsu Lee

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EDUCATION

10/2025 – 09/2026 **MRes Machine Learning and Big Data in the Physical Sciences,** Imperial College London

• Core modules: Statistical Methods; Applied Machine Learning; Accelerated processing for Big Data analysis.

09/2020 – 06/2025 **BSc Astrophysics**, University College London (UCL)

• Core modules: Mathematical Methods; Data analysis and statistics; Astrophysics and Computing; Quantum Mechanics; Physical Cosmology; Machine Learning.

• Explore Cohort Member of UCL Innovation and Enterprise

09/2017 – 06/2020 **International Baccalaureate**, The British International School Shanghai, Puxi (BISS)

• International Baccalaureate: Higher Level in Mathematics, Physics, and Geography

• Project on Efficiency of Photovoltaic Cells: Investigations on Photoelectric Effect and N-type semiconductor

WORK EXPERIENCE

07/2025 – 09/2025 **Research Intern,** A*STAR Q.InC

• Investigated quantum metrology protocols for the high-precision estimation of spacetime parameters

• Conducted a comprehensive review and comparative analysis of modern protocols in relativistic quantum metrology

08/2021 – 02/2023 **Sergeant, Squad Leader**, Republic of Korea Army

• Collaborated with commanders to plan, organise, and execute operations, resulting in a 30% increase in mission efficiency through strategic monthly missions.

• Developed communication and leadership skills; conducted on-site data analysis to identify patterns in the supply chain, enhancing supply chain efficiency

PROJECTS

06/2025 – Present **Quantum Metrology for Spacetime Parameter Estimation**, A*STAR Q.InC

• Analysed the performance of quantum probe states for estimating spacetime parameters; Schwarzschild Radius; Hubble Constant; Gravitational Wave parameter

02/2025 – 03/2025 **Application of Machine Learning in Neutrino Mass Research**, UCL

• Developed CNN and LSTM-based models (with timeseries and DFT) to predict chirp signal parameters. Achieved MSE 0.0980 using ensemble learning (stacking), demonstrating effective ML for enhanced neutrino detection

12/2024 – 03/2025 **Far-IR Emission as a tracer for star formation in Orion Molecular Complex**, UCL

• Analysed observations of dust emission made at 850μm using the SCUBA-2 camera on the James Clerk Maxwell Telescope (JCMT). Using a source finding algorithm, investigated the statistical properties of the cores, including determining their masses and creating a CMF

10/2024 – 12/2024 **Herschel SPIRE FTS analysis of AFGL2688**, UCL

• Conducted data analysis of spectra from the SPIRE Fourier Transform Spectrometer on the Herschel Space Observatory, achieving an 81% grade

EXTRACURRICULAR EXPERIENCE

08/2019 – 07/2020 **ACAMIS Volleyball Captain,** The British International School Shanghai

Led the varsity volleyball team, organizing training sessions and developing game strategies.

03/2019 – 06/2020 **Interpreter**, The British International School Shanghai

• Provided interpretation services between English and Korean for consultations with foreign students and their parents at school, facilitating effective communication and understanding

03/2019 – 03/2019 **Volunteer**, The British International School of Shanghai

• Participated in a volunteer project to improve living conditions in underdeveloped areas of Cambodia, collaborating with local communities to promote sustainable practices and enhance public health.

CORE SKILLS

Technical Experiences
- • Programming: Python
- • ML & Data Science: Pytorch, TensorFlow, Keras, Neural Networks, and relevant scientific libraries
- • Proficiency in Microsoft Office Suite: Excel, Word, PowerPoint

Languages
- • Bilingual in English and Korean
- • Basic level German and Chinese (Mandarin)

Soft Skills
- • Leadership experiences, Effective Communication and Problem-solving skills

PUBLICATIONS

Quantum Metrology for Spacetime Parameter Estimation

• Manuscript in preparation for journal submission (expected Nov 2025)