

DOOSEOK JUNG

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EDUCATION

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| University of Massachusetts Amherst , Amherst, MA | 2025 |
| Ph.D. in Astrophysics | |
| Yonsei University , Seoul, Korea (South) | 2017 |
| M.S. in Astronomy | |
| Yonsei University , Seoul, Korea (South) | 2014 |
| B.S. in Astronomy and Physics | |

TECHNICAL SKILLS

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|-------------|---|
| Programming | Python (PyTorch, Pandas, Numpy, Scipy, Matplotlib), R, Julia, SQL |
| Platforms | Jupyter Notebook , Pluto Notebook, GitHub, LaTeX |
| Modeling | Convolutional Neural Network (CNN) Multi-dimensional Signal Processing Numerical Optimization for Computational Pipelines |

EXPERIENCE

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|---|---------------------------|
| University of Massachusetts Amherst , Amherst, MA | 2018 – present |
| Research Assistant | |
| <ul style="list-style-type: none">Developed StarcNet, a multiscale CNN pipeline, achieving 86% accuracy on ~15,000 image samples, delivering classification performance comparable to human experts.Refined stochastic sampling and Bayesian modeling on ~28,000 data samples, building scalable pipelines for feature extraction, classification, and cataloging.Applied advanced statistical modeling (Gaussian convolution, regression, curve fitting) to analyze complex, high-dimensional datasets and uncover detailed structural patterns. | |
| Teaching Assistant, UMass Summer Research Experience in Astronomy | Summer 2022 |
| <ul style="list-style-type: none">Led hands-on training in SAOImageDS9 for local middle-school teachers, translating technical imaging and data visualization concepts into accessible lessons and strengthening communication with adult learners. | |
| Lecturer, Modern Astronomy, Pre-college Summer Program | Summer 2019 & Summer 2020 |
| <ul style="list-style-type: none">Delivered introductory lectures on computational mathematics and statistics with research applications to high school students, using Python and Jupyter Notebook, while fostering engagement and adapting explanations to early learners. | |
| Space Telescope Science Institute , Baltimore, MD | Summer 2024 |
| Visiting Scholar | |
| <ul style="list-style-type: none">Optimized Markov Chain Monte Carlo (MCMC) algorithms, reducing 1σ uncertainty and improving 84th-percentile accuracy in modeling large-scale, high-dimensional datasets from space-based observatories. | |
| Yonsei University , Seoul, Korea (South) | 2014 – 2017 |
| Research Assistant | |
| <ul style="list-style-type: none">Applied Gaussian kernel smoothing and chi-square model fitting to extract patterns and quantify distributions from large-scale 2D imaging datasets. | |

University of California Berkeley, Berkeley, CA
Summer Research Internship

Summer 2012

- Built structured data frames to organize and analyze ~5,000 records of complex positional datasets for classification and trend analysis.

ACADEMIC ACCOMPLISHMENTS

(8 leading-author and 3 co-authored publications, 15 presentations at international conferences)

Selected Publications:

Jung, D. E., Calzetti, D., Messa, M., Heyer, M., et al. (2023), *Astrophysical Journal*, 954, 136, “Universal Upper End of the Stellar Initial Mass Function in the Young and Compact LEGUS Clusters”

Pérez, G., Messa, M., Calzetti, D., Maji, S., **Jung, D. E.** et al. (2021), *Astrophysical Journal*, 907, 100, “STARNET: Machine Learning for Star Cluster Identification”

Selected Conference Attendance:

Galaxies at Crossroads 2024
Title: “Spectroscopic Analysis of Very Massive Stars in the Context of Upper End of the IMF and MZR”

#31 International Astronomical Union General Assembly 2022
Title: “Universal Upper Ends of the Stellar Initial Mass Function in the Young and Compact LEGUS clusters”

APEC Young Scientists Workshop II 2015
Title: “MESSIAH (Media Equipped Sexy Science with the Information of Awakening Humanity)”

CERTIFICATES

Statistics and Astroinformatics for Astronomers, Penn State Univ. Summer 2022

- Enhanced expertise in applied statistics and mathematical modeling through projects in Astrostatistics & Astroinformatics, utilizing diverse computational languages and tools related to ML/AI techniques (e.g. Python, R, Juila, SQL, Physics-informed ML)

PROFESSIONAL DEVELOPMENT

Science Reporter, Crossroads, Asia Pacific Center for Theoretical Physics 2015 – 2018

- Conducted interviews with renowned scientists, exploring their careers, personal journeys, and insights on advancing scientific development in Korea.

National Representative of Korea, APEC Young Scientists Workshop Mar – Oct 2015

- Represented South Korea in an international workshop on science communication, collaborating with global experts to improve public engagement with science.