

# DOOSEOK JUNG

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## EDUCATION

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

## TECHNICAL SKILLS

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

## EXPERIENCE

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<b>University of Massachusetts Amherst</b> , Amherst, MA	2018 – present
Research Assistant	
• 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
• 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
• 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.	
<b>Space Telescope Science Institute</b> , Baltimore, MD	Summer 2024
Visiting Scholar	
• Optimized Markov Chain Monte Carlo (MCMC) algorithms, reducing $1\sigma$ uncertainty and improving 84th-percentile accuracy in modeling large-scale, high-dimensional datasets from space-based observatories.	
<b>Yonsei University</b> , Seoul, Korea (South)	2014 – 2017
Research Assistant	
• 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**

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(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, “STARCNET: 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**

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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**

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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.