

Yu-Yen Chang

Experienced data science researcher with a PhD in astrophysics. Proficient in statistics, modeling, machine learning, and programming, with a proven track record of data-driven insights.

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Experience

- **Senior Data/Computational Scientist**, Turion Space, USA 01/2025 - Present
 - Apply advanced computer vision to extract insights from satellite imagery and synthetic data.
 - Design data fusion pipelines to integrate multi-spectral, temporal, and contextual data.
 - Optimize satellite trajectory using numerical methods for mission planning.
- **Associate/Assistant Professor**, Physics, NCHU, Taiwan 02/2020 - 01/2025
 - Led research group in classifying, clustering, and predicting diverse data with >80% performance.
 - Achieved >85% precision using cloud computing to investigate physical properties of galaxies.
 - Analyzed, simulated, and visualized >1M data sets from >30 databases, contributing to research.
 - Mentored >10 students and postdoctoral researchers to work on astrophysics and data science.
 - Delivered >10 lectures and >50 public speaking, and published >40 papers (citations>5000).
- **Insight Data Science Fellow** (20A.DS.SV), INSIGHT, USA 01/2020 - 03/2020
 - Discovered societal concerns from over 100K survey responses with Elucd company.
 - Provided location-specific living information for customers with ~80% performance.
 - Utilized Natural Language Processing to capture and cluster unstructured comments.
 - Combined text and geographic information to enhance trust and safety.
- **Postdoctoral Research Fellow**, ASIAA, Taiwan 10/2016 - 01/2020
 - Made breakthroughs in understanding active galaxies by XGBoost and Keras algorithms.
 - Interpreted different types of super-massive black holes and reached >80% performance.
 - Conducted comparisons of galaxy sizes using multi-wavelength (>30 bands) information.
 - Inspected galaxy evolution with >20 datasets from X-ray, UV, visible, IR, to radio surveys.
- **Postdoctoral Research Fellow**, CEA-Saclay, France 10/2014 - 09/2016
 - Created a catalog for 500K+ distant galaxies with state-of-the-art decomposed models.
 - Evaluated sizes differences ($>5\sigma$) between active and non-active galaxies by image processing.
 - Obtained observational data by writing and submitting successful telescope proposals.
 - Established statistical connection between active galaxy, star formation and galaxy morphology.
- **Postdoctoral/Graduate Research Fellow**, MPIA, Germany 09/2010 - 06/2014
 - Generated an 800K+ galaxy catalog by implementing Bayesian and chi-square fitting techniques.
 - Reconstructed 3D shapes of galaxies by their 2D projected images.
 - Demonstrated differences ($P_{KS} < 0.05$) between nearby and distant galaxies by modeling.
 - Unveiled structural and size evolution of galaxies over 11Gyr with interdisciplinary teams.

Education

- **Ph.D.:** Astronomy, Heidelberg University, Germany 12/2013
- **M.S.:** Physics, National Taiwan University, Taiwan 06/2010
- **M.S.:** Radio Astronomy and Space Science, Chalmers University of Technology, Sweden 01/2009
- **B.S.:** Communication Engineering, National Chiao-Tung University, Taiwan 06/2007

Skills

- Computer Vision ○ Data Modeling and Analysis ○ Data Visualization ○ Cloud Computing ○ Simulation
- Machine Learning ○ Statistics ○ Scientific Computing ○ Public Speaking ○ Mentorship ○ Research
- Image processing ○ Deep Learning ○ Natural Language Processing ○ Dimensionality Reduction
- Programming: Python, SQL, IDL, MATLAB, Mathematica, C, HTML/CSS, Git, & L^AT_EX
- Packages: Matplotlib, NumPy, SciPy, Pandas, LightGBM, XGBoost, Keras, NLTK, & scikit-learn