Hongri Hou

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EDUCATION

University of Science and Technology of China (USTC) **Hefei, China**
- Hefei Institutes of Physical Science, M.S. in Optics Degree Expected *06/2026*
- Current GPA: 3.74 / 4.30, Percentile Score: 88.9 / 100

University of Science and Technology of China (USTC) **Hefei, China**
- Department of Precision Machinery and Instrumentation, School of Engineering Science *06/2023*
- Bachelor of Engineering in Measuring & Controlling Technology and Instrument
- Cumulative GPA: 3.68 / 4.30, Percentile Score: 87.4 / 100, Major Ranking: 4 / 25

Research Interests: Optics, Remote Sensing, AR/VR, Robotics, Visual Mapping, Vision Positioning System

PUBLICATION

- **H. Hou**, W. Su, C. Zhang, H. Liu, C. Liu, *First Cooperative Formaldehyde Monitoring with Chinese Morning and Afternoon Satellites: Revealing Global Multi-Temporal Concentration Dynamics.* **Revision submitted to IEEE Transaction on Geoscience and Remote Sensing.**
- **H. Hou**, W. Su, C. Zhang, C. Liu, *Transformer-based Inverse Radiance Transfer Framework for Global Trace Gas Retrieval Using Metop-B/IASI.* **Submitted to Journal of Remote Sensing.**
- X. Wang, Q. Hu, C. Zhang, W. Su, Q. Li, **H. Hou**, C. Liu**,** *First global twice-daily ozone profiles from Chinese UV–vis satellites via synergistic spectral calibration and retrieval***, Remote Sensing of Environment (2025)** DOI: 10.2139/ssrn.5185353
- Y. Xu, W. Su, Q. Hu, C. Zhang, Z. Javed, Y. Tian, **H. Hou**, C. Liu, *Unexpected HCHO transnational transport: influence on the temporal and spatial distribution of HCHO in Tibet from 2013 to 2021 based on satellite*. **npj Clim Atmos Sci (2024)** DOI: https://doi.org/10.1038/s41612-024-00639-9

RESEARCH EXPERIENCE

iFLYTEK Spark Large Model Innovative Application Competition **Hefei, China**
Single member as a team *08/2024-10/2024*
- Built a web demo to achieve a better effect of RSS reader by automatically generating the summary of the feeds from RSS and generating PPT as well as a total summary for a specific uploaded paper using Spark LLM API
- The front-end tech stack mainly used HTML/CSS/JavaScript, while the back-end primarily utilized the Flask framework

China Platform of Earth Observation System: ASEAN Atmospheric Environmental Quality Application Demonstration **Beijing, China**
A Research Program Organized by Aerospace Information Research Institute, Chinese Academy of Sciences
Module Developer, Supervised by Professor Cheng Liu *05/2023-11/2024*
- Constructed the Atmospheric Environmental Quality Comprehensive Demonstration Program in the ASEAN region at the China Platform of Earth Observation System; the total fund was 1.1 million yuan
- Developed a high-value remote sensing monitoring module and a spatiotemporal representation integrated application module for ozone control based on high-resolution satellite observation for retrieval of gas concentrations

Verification & Application Based on Multi-time Concentration of HCHO from Domestic Satellites
Bachelor's Graduation Thesis, Supervised by Professor Cheng Liu **Hefei, China**
Primary Contributor *10/2022-05/2023*
- Conducted retrievals and data analysis on spectral data from domestic satellites and contributed to the writing of the research paper titled *Unexpected HCHO transnational transport: influence on the temporal and spatial distribution of HCHO in Tibet from 2013 to 2021 based on satellite*

- Improved and optimized the inversion algorithm which inversed the radiance spectrum observed by the satellites to retrieve trace gas concentrations, and selected better inversion configurations to achieve better inversion results
- The concentration of the satellite in the morning and afternoon was applied globally after validation with MAX-DOAS site data

Robogame, the Special Program of Robotic Research and Manufacture Competition **Hefei, China**
Team leader, Supervised by Professor Huichun Ye *05/2021-10/2021*

- Responsible for the design, processing, and assembly of the overall structure in the robotics competition team
- Helped team members win the first prize, ranking eighth among over thirty teams

COURSE DESIGNS

Untrained Image Editing Methods based on Key Layers **Hefei, China**
Digital Image Processing **Course Design**
Single member, Supervised by Professor Yudong Guo *10/2024-12/2024*

- Tried to reproduce the data of a published paper in the absence of open-source codes
- Used GPT to generate 64 prompt words and the random function to randomly produce seeds, then carried out denoising and generation: jumped separately the 57 layers of Flux and input them into DINOv2 to compare the similarity between the reference image and the generated image after removing specific layers
- Two injection methods for key tokens were independently defined: ratio screening and threshold screening, and relatively good editing effects were obtained

The General Design and Modeling Simulation of Quadruped Robot Dogs **Hefei, China**
Precision Instrument Design **Course Design**
Single member, Supervised by Professor Jianping Wang *08/2022-01/2023*

- Investigated quadruped robotic dogs, independently established the 3D model, and produced the assembly drawing
- Built a motion model of the walking-gait of the robotic dog and used MATLAB/Simulink for simulation with mechanical feedback
- Carried out static stress analysis on the established 3D model for optimization

ACHIEVEMENTS/AWARDS

- 20th National Mathematical Modeling Competition for Graduate Students, Third Prize *October 2023*
- Outstanding Graduate of USTC (15%) *June 2023*
- Outstanding Student Scholarship, Silver Award, USTC (10%) *March 2022*
- The Special Program of Robotic Research and Manufacture Competition, First Prize (20%) *October 2021*
- Outstanding Student Scholarship, Bronze Award, USTC (20%) *March 2021*
- Outstanding Student Scholarship, Bronze Award, USTC (20%) March *2020*

TECHNICAL PROFICIENCIES

- Programming: Proficient in Python, MATLAB, Vim and Linux/Bash, Familiar with Fortran/C++, C
- Language: English (Proficient), Japanese (Elementary)
- Personal Interest: Running, badminton, basketball