

Jinjun Liu

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Education

Texas A&M University

PH.D. IN ATMOSPHERIC SCIENCES (IN PROGRESS), GPA: 3.8/4.0

College Station, Texas

Sep. 2017 - Aug. 2024 (expected)

- Research topics: Radiative transfer model; Characteristics of large-scale environmental variables and climate variability related to tropical cyclones in different climates; Tropical cyclones properties in high-resolution global climate model simulation. Downscaled TCs. Rapid intensification of TCs.
- My research work involves model development, large datasets processing, providing physical explanations, and presenting data visually.
- Teaching Assistant work: Instructor of ATMO 202: Weather & Climate Laboratory; Grader of ATMO 363: Introduction to Atmospheric Chemistry and Air Pollution

Georgia Institute of Technology

M.S. IN COMPUTER SCIENCE, GPA: 3.8/4.0

Online

Jan. 2019 - May 2022

- Coursework: Machine Learning, Data and Visual Analytics, Database Systems Concepts and Design, Machine Learning for Trading, Software Development Process, Computer Networks, AI for Robotics, Computer Vision, Deep Learning, Graduate Algorithms.

University of Science and Technology of China

B.S. AND M.S. IN ATMOSPHERIC SCIENCES

Hefei, China

Sep. 2010 - Jun. 2017

Skills

Programming Languages Python, Java, FORTRAN, MATLAB, C, SQL, JavaScript

Technologies Git, Linux, Docker, Django, Python data science libraries (e.g., PyTorch, NumPy, Xarray, Pandas, etc), ChatGPT

Presentations

Relationship of African Outgoing Longwave Radiation and Tropical Cyclone Genesis

New Orleans, LA

AMERICAN METEOROLOGICAL SOCIETY'S 35TH CONFERENCE ON HURRICANES AND TROPICAL METEOROLOGY

May 2022

- We study the relationship between the reversal of the meridional potential vorticity (PV) gradient, the instability of the African easterly jet (AEJ), and the Outgoing Longwave Radiation (OLR) index in CESM Last Millennium Ensemble to understand the physical relations of African OLR and Atlantic tropical cyclone (TC) genesis. [Poster Link](#)

Atlantic Multidecadal Variability and Tropical Cyclones in Last Millennium Climate

Virtual Meeting

AMERICAN METEOROLOGICAL SOCIETY'S 34TH CONFERENCE ON HURRICANES AND TROPICAL METEOROLOGY

May 2021

- We study how volcanic eruptions and the Atlantic Multidecadal Variability affect North Atlantic tropical cyclones. We compare storms during and after eruptions with those from positive/negative AMV phases to understand the AMV's impact. [Poster Link](#)

Comparison of the TAMU-VRTM and CRTM in the Gas Absorption Calculation

Boston, MA

100TH AMERICAN METEOROLOGICAL SOCIETY ANNUAL MEETING

Jan. 2020

- We develop a fast numerical radiation transfer model for the Moderate Resolution Imaging Spectroradiometer (MODIS) bands, and compared it with the Community Radiative Transfer Model (CRTM) in terms of gas absorption. [Poster Link](#)

Sensitivity study of the radiance to properties of nonspherical dust aerosols

College Station, TX

17TH ELECTROMAGNETIC AND LIGHT SCATTERING CONFERENCE

Mar. 2018

- We use an adding-doubling radiation transfer model and a dust aerosol database to analyze the sensitivity of the radiance to the optical and micro-physical properties of non-spherical dust aerosols. [Poster Link](#)

Publication

- [Jinjun Liu](#), Robert Korty, et al. "Impacts of Model Horizontal Resolution on the Potential Intensity of Tropical Cyclones in Community Earth System Model." (in preparation)
- Rui Li, Yipu Wang, Jiheng Hu, Yu Wang, Qilong Min, Yves Bergeron, Osvaldo Valeria, Zongting Gao, [Jinjun Liu](#), and Yuyun Fu. "Spatiotemporal variations of satellite microwave emissivity difference vegetation index in China under clear and cloudy skies." Earth and Space Science 7, no. 5 (2020): e2020EA001145. [Link](#)
- [Jinjun Liu](#), Yunfei Fu, Rui Li, Yu Wang, Yuyun Fu, and Jiheng Hu. "The Influence of Atmosphere to Passive Microwave Retrieval of Snow Depth over Qinghai-Tibetan Plateau." Plateau Meteorology 37, no. 2 (2018): 305-316. (Written in Chinese with an English abstract provided on the last page.) [Link](#)

Programming Projects

Udacity Java Programming Nano Degree

2022

- Hotel Reservation Application: The Hotel Reservation App is a Java-based application that enables users to book rooms, view their reservations, and manage customers, rooms, and reservations as an admin. The app ensures rooms are not double-booked, provides recommended rooms, and handles exceptions gracefully.
- Web Scrawler: I use concurrent programming to improve a legacy web crawler, making it multi-core compatible. The crawler reads a JSON file, downloads and parses multiple HTML documents in parallel, and records popular web terms in an output file. Additionally, a method profiling tool is built to measure the efficiency of the crawler and demonstrate the benefits of the parallel implementation.
- UdaSecurity: I developed a GUI application (UdaSecurity) to manage home security systems. To improve its scalability, I restructured it into a multi-module Maven project and incorporated unit tests using JUnit 5 and Mockito libraries. The program has been thoroughly tested and functions as intended.
- [GitHub Link](#); [Certificate Link](#)

Deep Learning Methods to Detect Hateful Memes (Deep Learning)

Spring 2021

- Developed an ensemble learning model based on VisualBERT to detect hateful memes in the Hateful Memes Challenge proposed by Facebook. The algorithm achieves 0.7675 AUROC with an accuracy of 0.7111. [Report Link](#)

Activity Classification using MHI (Computer Vision)

Fall 2020

- Implemented the methods to create Motion History Images (MHIs) and use these images to perform activity classification in a video. My algorithm can successfully classify human walking, jogging, running, boxing, waving, and clapping in a video.

Android App: A Word Find Game (Software Development Process)

Spring 2020

- An Android game for users to choose letters from a randomly generated board to find words. Users can choose various settings to play the game within a limited time. Users can also see their score statistics after the game. We designed in UML class diagram and implemented it in Java. We used SQLite to store and inference statistics data.

A Website for Selling Used Cars (Database Systems Concepts and Design)

Summer 2019

- A website for customers and car shop employees (including inventory clerks, salespeople, managers, and owners) to perform different activities through the website according to their roles. For example, the general public can search cars. Logged in users can search, and/or update the information of the car and customer database, per their permissions. Privileged users can also see statistics reports on the website. We implemented the database with MySQL and designed the front-end with PHP, JavaScript, and CSS.

ML Methods to Predict House Prices in Los Angeles (Data and Visual Analytics)

Spring 2019

- We developed an accurate house price prediction model in the Los Angeles area with the integration of multiple community/environmental data and local economic indicators. We used various machine learning methods (e.g., support vector, random forest, etc) to make the prediction, and results were visualized on a map. [Poster Link](#)