

Tianyi Xu

<https://www.linkedin.com/in/tianyi-xu/>

Email : txu223@wisc.edu

Mobile : +1-608-692-2943

EDUCATION

- **University of Wisconsin-Madison** Madison, WI
Bachelor of Science in Computer Science, Data Science, Math; GPA: 3.964 *Sept. 2021 – May 2025 (Expected)*
Coursework: Learning-based CV (graduate level), Algorithms, Artificial Intelligence, Computer System, Databases, Data Structures, Deep Learning, Machine Learning, Optimization, Real Analysis, Probability.

EXPERIENCE

- **Wisconsin Institute of Discovery** Madison, WI
Undergraduate Research Assistant *Jan 2023 - Present*
 - : Analyzed large, high-dimensional microbiome datasets to extract patterns, employed visualization tools, dimension-reduction techniques, statistical analysis and regression models in R.
 - : Built and analyzed graphical networks to understand the effects of fumigation on various predictors.
 - : Actively developing a pipeline in Python for processing audio data and feature engineering and developing a Faster-RCNN model in PyTorch for sound event identification.
- **UW-Madison Material Sciences** Madison, WI
Undergraduate Machine Learning Researcher *Feb 2023 - May 2023*
 - : Implemented learning-based CV methods, using Python, to identify aggressive tumor traits in kidney CT scans.
 - : Developed a deep convolutional neural network (CNN) with PyTorch, optimized its performance to achieve an impressive improvement in accuracy from 60 % to 95 % during testing.
 - : Assessed the robustness of the CNN model through different testing methods, including permutation tests, confusion matrix, etc.
- **UW-Madison, Division of Information Technology** Madison, WI
Student Developer *Apr 2022 - Sept 2022*
 - : Refined the UI by enhancing dark mode readability and ensuring user preferences were stored effectively.
 - : Developed and documented new APIs, integrating with a MySQL server to streamline data storage/retrieval.
 - : Developed a staff filtering system using React.js, facilitating efficient searches among the 1000 employees.
 - : Identified and resolved issues in the shift scheduling system, ensuring a smooth user experience.
- **UW-Madison Computer Sciences** Madison, WI
Undergraduate Teaching Assistant *Aug 2022 - Present*
 - : Selected as teaching assistant for CS220 and CS320, Data Science Programming I/II.
 - : Held over 220 hours office hours, guiding 300+ students through Python programming challenges and data science concepts, spanning topics from object-oriented programming to data visualization and machine learning.
 - : Collaborated with the instructional team to design and oversee exams for over 1000 students.

PROJECTS

- **Teeko AI Player**: Developed an AI player for the Teeko game using Python and Pygame. Incorporated efficient algorithms to explore all game states and utilized the minimax algorithm with depth cutoff, along with an authentic euclidean heuristic, allowing for a guaranteed victory against random players.
- **Hierarchical Clustering - Pokemon**: Developed a hierarchical clustering algorithm in Python using numpy, grouping Pokemon based on six distinct features, providing a clear insights into Pokemon groupings.
- **Minirel Database**: Conceptualized and executed a relational database structure, designing its ER diagram and schema. Used C++ to implement core database functions, including a buffer manager, a heapfile system, and various database operators.
- **Flight Searcher**: Developed a Java-based tool to identify optimal flight routes from a database of 5000+ flights, and implemented the Dijkstra algorithm to ensure passengers find the shortest path efficiently.

SKILLS

- **Programming Languages**: Python, R, Java, C/C++, JavaScript, HTML, CSS, SQL
- **Other Tools**: Pytorch, TensorFlow, Pandas, Scikit-Learn, Flask, React, Node.js, MySQL, Sqlite3, Git, Linux, GCP