

Umberto Fasci

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A dedicated individual pursuing a career in data science. With over four years of experience developing and utilizing data centric workflows on a nearly daily basis I have gained and honed my skills as a data scientist. During my time as a researcher I have been tasked with the retrieval, preparation, transformation, and analysis of data in many forms. My experience has had me working with spatial, tabular, and time series data. I have proven experience with the preparation and utilization of image, text, and self-generated data. On the whole, I possess wealth of interest and motivation to perform as a bridge between data and valuable interpretations.

EXPERIENCE

Aug 2021 — Present	Graduate Research Assistant, Applied Machine Learning and Data Science for Spatial Disease Ecology Texas A&M International University	Laredo, TX
	<ul style="list-style-type: none"> Performed exigent data analysis and preparation on coordinate, spatial climatic, and other numerical data. Utilized and mastered data facing tools within the R and Python ecosystems. Coordinated and maintained custom ML models and statistics for publication. Developed custom ML modeling workflows for spatial/geographical projections. Evaluated and consulted on the statistical integrity and workflow for several publications. Led intra-department exigent consultation on statistical coding and methodologies. Researched and integrated statistical methods for laboratory needs. Researched and integrated GIS methodologies for laboratory needs. Led interpretation of numerical results. 	
Aug 2019 — May 2020	Student Researcher, Applied Machine Learning and Data Science for Spatial Ecology Texas A&M International University	Laredo, TX
	<ul style="list-style-type: none"> Developed query workflow for data acquisition for laboratory needs. Formulated workflow for data preparation for laboratory needs. Utilized data science tools within the R ecosystem. Constructed and maintained custom ML models for publication. 	
Aug 2017 — May 2018	Student Researcher, Mathematics Texas A&M International University	Laredo, TX
	<ul style="list-style-type: none"> Formulated proof of sequential arithmetic behavior regarding the decomposition of powers of all real numbers in sequence. Led presentations for mathematics faculty focusing on this research. 	

EDUCATION

Aug 2020 — Present	Master of Science, Texas A&M International University	Laredo, TX
	<ul style="list-style-type: none"> Awarded a Graduate Assistantship for studies proposing ML techniques to better describe climatic influences of zoonotic disease suitability in geographic space. Collaborated with investigators at Universidad Iberoamericana (UNIBE) regarding the creation of the first ML model describing the potential distribution of invasive mosquito species in North America. Maintained average GPA of 3.8 	
Aug 2016 — May 2020	Bachelor of Science, Texas A&M International University	Laredo, TX
	<ul style="list-style-type: none"> Conducted multiple research projects in subjects ranging from Developmental Biology, Mathematics, Bioinformatics, and Spatial Data Science. Designed and constructed over 800 ML models focusing on the spatial ecology of species presence across continental space. 	

SKILLS	Data Science	Experienced	Deep Learning	Skillful
	Python	Experienced	Machine Learning	Experienced
	R	Experienced	Git	Skillful
	TensorFlow	Skillful	Data Visualization	Experienced

LANGUAGES	English	Native speaker	Spanish	Native speaker
	Mandarin	Learning		

CERTIFICATIONS

Apr 2022

TensorFlow Developer Certification

Globally recognized certification demonstrating a proficiency in utilizing the TensorFlow framework to solve deep learning and machine learning problems. This includes problems in computer vision, natural language processing, and time series forecasting.

PROJECTS

Present

Chytrid Fungus: Suitable Climate Conditions Prediction

- Gathered and constructed a multi-source dataset encompassing location, geographical, and climatic data (Present and Future).
- Transformed climatic spatial data into appropriate size and resolution for analysis utilizing GIS techniques.
- Performed statistical and ML modeling utilizing custom Maximum Entropy algorithm to obtain potential regions of suitability according to space and climate.

Present

Prediction of Shipping Cost on Freight Brokerage Data for Health Commodities

- A complete analysis and prediction workflow based on the Supply Chain Shipment Pricing dataset provided by the Bureau for Global Health.
- Technologies utilized for this project include Python, Pandas, NumPy, and TensorFlow.
- Algorithms explored for this project include Gradient boosted decision trees, multiple linear regression, deep neural network, XGBoost regression, and LightGBM regression.

Present

Dyson Swarm Algorithm

- Researching theory regarding The Dyson Sphere and possible amendments to theoretical issues which may arise from a conventional model.
- Performing tests revolving around a satellite swarm model, and constructing an energy retrieval, storage, and transport algorithm.
- Constructing a Swarm Intelligence architecture to carry out the theoretical function of a Dyson Sphere.

Apr 2023

Parkinson's Disease Progression Prediction

- Conducted exploratory data analysis on tabular clinical data.
 - Performed a feature selection workflow allowing for more appropriate neural network modeling procedures.
 - Carried out data processing through pre-model transformations.
 - Created a custom sMAPE loss function according to client needs.
 - Constructed a sequential dense neural network utilizing processed input data, and instantiated custom loss function during compilation.
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CONTRIBUTIONS

Open Source Contributions

Pandas

- **Package Description:** An open source data analysis and manipulation tool built on top of the Python programming language. Being one of the most utilized tools in data science, pandas is implemented in almost every data science workflow.
 - **Contributions:**
 - Rendered improvements and fixes to source file documentation describing data subsetting on a public facing interface allowing for an enhanced reviewing experience.
 - Contributed to Pandas enhancement proposal concerning upcasting ban for "setitem-like" operations.
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Peer-Reviewed Journal Publications

Fasci, U.J. and C.B. Eversole. Current and future projected suitability of chytrid fungus (*Batrachochytrium dendrobatidis*) infection in amphibians. A delineation on predictor variable effects and potential climatic influence. (*In Prep.*)

Eversole, C.B., R.L., Powell, D. Lizarro, U.J. Fasci, G. Calderon Vaca, and E. Surovic. 2020. Ecological niche and species distribution of the banded tree anole (*Anolis transversalis* Dumeril 1851 (Sauria, Dactyloidae)) with new record from Bolivia. *Herpetological Review* 51(4):686-690.

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