Anđa Denić

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LinkedIn | GitHub

Skills

- AI, ML, Machine Learning, Data Science, Data Analytics, Computer Vision, NLP
- **Python**: NumPy, Sckit-learn, Matplotlib, PyTorch, Pandas, SciPy, Gymnasium
- **Mathematics**: Multivariable Calculus, Probability, Statistics, Optimization Theory
- **English**

Education

My Academic Transcript

PhD student in Applied Mathematics
Faculty of Sciences and Mathematics, University of Nis, Serbia

- Focus on **statistics** and **machine learning**

MSc in Machine Learning and Artificial Intelligence
Faculty of Sciences and Mathematics, University of Nis, Serbia

- Defended master's thesis "Image captioning using ResNet and LSTM models"
- GPA: 9.88/10.0

BSc in Mathematics
Faculty of Sciences and Mathematics, University of Nis, Serbia

- GPA: 9.16/10.0

Gymnasium "Svetozar Marković", Nis, Serbia

- Class for students talented in mathematics

Experience

Teaching Associate
Faculty of Electronic Engineering, University of Nis
February 2024 - present

- Calculus, Mathematical Analysis, Numerical Analysis, Probability and Statistics

Machine Learning Engineer Internship
Diffine
April 2023 – Jun 2023.

- Machine Learning, Computer Vision, Data Analysis

Other

Studygroup Mathematics with Industry 2025
Utrecht University, Utrecht, Netherlands
January 27 to January 31, 2025.

- SWI is a combined industrial–academic week-long workshop where seventy mathematicians work in groups on problems submitted by companies.
- My group and I worked for a week on a problem with implementing Bayesian marketing mix modelling given by pharmaceutical firm Opella.
- Our results are published as **scientific proceeding** "Tackling Multicollinearity in Marketing Mix Models: A Bayesian Hierarchical Shrinkage Approach".

Conference talk
May 2024, University of Kragujevac, Serbia

- I gave a conference talk in The Third Serbian International Conference on Applied Artificial Intelligence
- I presented my work in bioinformatics "*Exploring Word2Vec Models for Capturing the Similarity of Codon Embeddings*"
- I received the **award for the best student work**
- Video recording of that conference talk

STEM Lecturer
American Corner Niš, Serbia
April 2025 – Jun 2025.

- I designed and delivered 10 STEM workshops in English on fundamental concepts, problems, and algorithms in statistics, machine learning, data science, and neural networks.

Machine Learning and AI projects

Image Captioning

https://github.com/andjadenic/ImageCaptioning

- Technologies: **Python**, **PyTorch**, **torchvision, pandas**
- **Computer Vision**, **NLP**, **Encoder Decoder**, **LSTM**, **ResNet**
- For a given image that machine sees for the first time as input, it should generate a sentence description of that picture as output.
- The project follows an encoder–decoder structure where ResNet is encoder and LSTM is decoder.
- Training data is MC COCO dataset that includes 5 captions for 330k images.

Sentiment Analysis

https://github.com/andjadenic/Sentiment-Analysis

- Technologies: **Python**, **PyTorch**, **genism**, **pandas**
- **Supervised Learning**, **NLP**, **LSTM**
- The goal of this project is to enable machine to **automatically classify a movie review** as either "positive" or "negative" based on a given dataset of review-sentiment pairs.
- The model is a multilayer LSTM with an additional fully connected linear layer and sigmoid activation function that produces prediction.
- Model is trained on "IMDB Review Dataset" that contains 50,000 movie reviews labeled as ‘positive’ or ‘negative’.
- The model with tuned hyperparameters achieved 88.93% accuracy on test dataset.

Neural Hidden Markov Model

https://github.com/andjadenic/Neural-Hidden-Markov-Model

- Technologies: **Python**, **PyTorch**, **pandas**
- **CNN, Hidden Markov Model, LSTM, POS tagging**
- The goal of this project is to automate **part-of-speech tagging**, the process of identifying a word in a text as a noun, verb, adjective, adverb, etc., based on both its definition and its context.
- Hidden Markov Model is assumed to be the base underlying model and transition and emission matrices are neutralized using LSTM and CNN.
- Inference is done using the Viterbi algorithm that finds the most probable hidden states (tags) for given observations (sentence).

Exploring Word2Vec Models for Capturing the Similarity of Codon Embeddings
github.com/andjadenic/Word2Vec-models-for-codon-embeddings

- Technologies: **Python**, **Matplotlib**, **SciPy**, **Gensim**
- **Bioinformatics**, **Machine Learning**, **NLP**, **Sequential Data**
- Project empirically analyze the quality of 3-mer (codon) word2vec embeddings of the genome sequences of V. Cholerae and E. Coli.

Reinforcement Learning Algorithms Using Gymnasium Frozen Lake
github.com/andjadenic/RL_frozen_lake

- Technologies: **Python**, **Gymnasium**
- Bellman Equation, Policy Evaluation and Improvement, Monte Carlo Methods, Temporal Difference (SARSA, Expected SARSA, Q-Learning)
- Project implements all basic RL algorithms from scratch using the popular Toy Text environment in Gymnasium Frozen Lake.
- I wrote supplementary notes that explain all the basic methods.

Bayesian Linear Regression Inference: Ironman Triathlon World Championship Data
github.com/andjadenic/BayesianRegression

- Technologies: **Python**, **Pandas**, **NumPy**, **SciPy**, **Matplotlib**
- **Bayesian Inference**, **Linear Regression**
- Project explores the usage of Bayesian linear regression inference and running time as a predictor of the overall finish time of participants in the Ironman Triathlon World Championship.