

Daniel Palamarchuk

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Education	Master of Science in Computer Science VIRGINIA TECH - SANGHANI CENTER FOR AI & DATA ANALYTICS 3.92 GPA	Expected May 2024
	Bachelor of Science in Computational Modeling & Data Analytics VIRGINIA TECH - COLLEGE OF SCIENCE 3.72 GPA	May 2023
	Bachelor of Science in Computer Science VIRGINIA TECH - COLLEGE OF ENGINEERING 3.73 GPA	

Work Experience	Undergrad/Grad Research Assistant VIRGINIA TECH - BLACKSBURG, VA	February 2023-Present
	Under Dr. Christopher North in collaboration with the Savannah River National Laboratory, found ways to effectively visualize high dimensional temporal word2vec and doc2vec embeddings relating to nuclear power using PCA, t-SNE, MDS, and UMAP.	
	Computer Science Teacher RUSSIAN SCHOOL OF MATHEMATICS - HERNDON, VA	May-August 2023
	Taught and created curriculum for two Python classes. The first was an introduction to Python and game development, centered around the elementary school level. Utilized the PyGame package. The second class was an introduction to data analytics, linear algebra, and machine learning centered around the middle school level. Utilized the Numpy, Pandas, Scikit-learn, and TensorFlow packages.	
	Undergraduate Research Assistant VIRGINIA TECH - BLACKSBURG, VA	November 2021-May 2023
	Under Dr. Andrew Scerri and Dr. Christian Lucero, used Structural Data Modeling to analyze Virginia state environmental bill and lobbying data. Created a web dashboard using R and the flexdashboard package to visualize findings. Demonstrated uniqueness of climate legislation with respect to other categories of legislation using Chi Square Test of Homogeneity. A research paper on the findings is currently in progress. This experience required me to work with professors and students across the political science and data science departments and to satisfy the qualitative and quantitative needs of both	
	Math Teacher RUSSIAN SCHOOL OF MATHEMATICS - RESTON AND HERNDON, VA	2019-May 2023
	Substituted high school geometry, elementary school arithmetic, and middle school algebra. Math courses taught included math competition preparation and preparation for the IOWA test . Also taught a course on HTML & vanilla javascript , in addition to two courses in the Python programming language. Produced curriculum for one of the Python courses. In addition, did expense accounting for the entire school	
	Senior Tutor RUSSIAN SCHOOL OF MATHEMATICS - WINCHESTER, MA AND RESTON, VA	2015-2019
	Tutored kids ranging K-12 in: geometry, algebra and math team preparation	

Projects	Fishing Boat Pricing Model TOOLS: R, PYTHON, VIM, GIT, MATLAB	April 2023
	Predicted the price of boats given their model, year, and location of sale. We successfully built a web scraper to obtain data on individual boat models and combined it with World Development Indicator metrics in a multiple linear regression model.	
	Word Difficulty Estimation Model TOOLS: R, VIM, L ^A T _E X, GIT, MATLAB, PYTHON	February 2023

Predicted the difficulty and participation of a Wordle word with a team using several models. Initial analysis included association rules and frequency analysis. The models used to predict the difficulty were a linear model, neural network, and k-nearest neighbors. Participation prediction was made using an ARIMA forecasting model

Currency Profitability Model

February 2022

TOOLS: R, VIM, L^AT_EX, GIT, MATLAB

Maximized profitability through purchasing bitcoin and gold in late 2020-early 2021 with a team using Q-Learning and self made models. Our simulation started off with \$1000, and we ended up with the following profits for each model: \$81170.16 for a dummy model that went all in on bitcoin and sold after it passed \$50000 (to represent maximum possible potential), \$68571.04 for the hand-crafted model that took advantage of the bitcoin spike, \$4000 for the hand-crafted model whose parameters were tuned to be more general, and \$13 for the Q-Learning model.

Show Recommendation System

Summer 2021

TOOLS: R, RSTUDIO, GIT

Created a collaborative filtering recommendation system for Japanese animation which predicted the top-N recommendations

Vespa Wasp Identification System

February 2021

TOOLS: R, RSTUDIO, L^AT_EX, MATLAB

Created a notebook with a team that used exploratory data visualization, Gaussian Naive Bayes, binary image classification, and frequency analysis to identify Vespa Mandarin wasps in Oregon

Data Visualization of Virginia Covid Cases

Summer 2020

TOOLS: R, RSTUDIO, VIRGINIA DATA PORTAL

Created an exploratory data visualization notebook that graphed covid cases within Virginia

Honors

VT Outstanding CMDA Senior award (\$1000)

March 2023

VT CMDA Research Grant (\$1000)

January 2023

Dean's List

2019-2023

Math Contest in Modeling (MCM) Meritorious Winner

February 2022

VT CMDA Research Grant (\$1500)

January 2022

Skills

Spoken Languages: Russian, English

Computer Languages: R, C, Python, Java, Matlab, HTML, CSS, JS, Lua

Tools: VIM, GIT, Tidyverse, flexdashboard, plotly, L^AT_EX, Linux, OpenMP, MPI

Conferences

Scerri, A., Bromley-Trujillo, R., Hao, F., Alexander, A., Lucero, C., **Palamarchuk, D.**, Paragas, S., (May 2023).

“Who influences climate and energy policy in VA?” In: State Politics and Policy Conference 2023.

Palamarchuk, D., Gillespie, J., Mukora, V., (Jan. 2023). “Two Time Participants' Reflection on MCM.” In:

Joint Mathematics Meetings. Boston, MA.

Paragas, S., **Palamarchuk, D.**, Scerri, A., Lucero, C., Alexander, A., (Oct. 2022). “Using Network Analysis to

Study Relationships in Climate and Energy Legislation.” In: 2022 SACNAS National Diversity in STEM

Conference.