Daniel Palamarchuk

Clifton, VA (781) 670-0463 dpalam@umd.edu https://danilka4.github.io

Education

PhD in Computer Science 2025-Present
UNIVERSITY OF MARYLAND - COLLEGE PARK, MD - BRENDAN IRIBE CENTER
Dean's Fellowship

Master of Science in Computer Science 2022-May 2024
VIRGINIA TECH - BLACKSBURG, VA - SANGHANI CENTER FOR AI & DATA ANALYTICS
3.96 GPA - Finalist for 2024 Torgersen Graduate Student Research Excellence Award - Thesis: Temporal Topic Embeddings with a Compass

Dual Bachelor Degrees in Data Analytics and Computer Science 2019-May 2023
VIRGINIA TECH - BLACKSBURG, VA - COLLEGES OF SCIENCE AND ENGINEERING
3.72 GPA - VT Outstanding CMDA Senior - Deans List 2019 to 2023 - Minors in Political Science, Mathematics

Experience

Software Engineering Intern April 2025-August 2025
LIEBHERR MINING EQUIPMENT CO. - NEWPORT NEWS, VIRGINIA

- **Automated and sped up** (by **75%**; from 8 to 2 min) HMI configuration build (Jenkins, Bash, Python)
- Created **LLM-assisted** test case generator framework visio flowcharts. Used few-shot context and adjacency list graph representation optimizations (Visio, LLaMA3, SAM Model)
- Translated and pushed $700+$ signals and faults using the PTC IM API (Powershell, BAT, PTC RV&S)
- Made MQTT client program to gather and push hardware sensor information and logs to parent servers using **Sparkplug B**. Added program to system **k3s** cluster and integrated its components to system SBOM (C, Mosquitto, MQTT3, Sparkplug B (IIoT), FTP, kubernetes/k3s, conan, cmake, cdxgen)

Graduate Research Assistant/NLP Researcher February 2023-December 2024
VIRGINIA TECH - BLACKSBURG, VA - SANGHANI CENTER FOR AI & DATA ANALYTICS
Under advisor Dr. Chris North (Computer Science):

- Created **Temporal Topic Embeddings with a Compass** (TTEC), a **NLP** method for dynamic topic modeling using temporal word2vec and doc2vec vectors and finding clusters in them (Python, Cython, Gensim)
- Created visualization methods combining dynamic topic modeling and dynamic word embeddings
- Scaled method to dataset of **5.5 million** documents to pinpoint corpus events and generate insight
- Performance matched transformer state of the art (BERTopic)
- Gave weekly presentations to team of six, including members from the Savannah River National Laboratory, on state of development
- First author of paper submitted to **IEEE VIS 2024** describing TTEC and its resulting visualizations

Computer Science Teacher May 2023-Present
RUSSIAN SCHOOL OF MATHEMATICS - HERNDON, VA

- Taught self-made 6-week game development course for grades 5-7 that used the PyGame package and taught object-oriented programming and logic flow
- Developed and taught 6-week introduction to **graph theory and social networks** class for grades 8-10 and introduction to linear algebra and **data analytics** class for grades 6-8, both of which utilized data science Python packages
- Developed and taught 6-week introduction to web development class in HTML, CSS, and JavaScript
- Developed course for IOWA test preparation for 50 students
- Filed accounting for school and regional expenses

Undergraduate Research Assistant November 2021-May 2023
VIRGINIA TECH - BLACKSBURG, VA
Under Dr. Andy Scerri (Political Science) and Dr. Christian Lucero (Data Science):

- Analyzed Virginia state environmental bill, educational bill, and donation data using classical statistical methods, including linear regression, chi squared tests, and community detection
- Discovered trends that affected passage rates of bills in committees and in general
- Created and published a web dashboard using R and the flexdashboard package to visualize findings
- Collaborated with professors and students across the political science and data science departments to satisfy the qualitative and quantitative needs of both
- Co-authored **journal paper** on findings (under review)

Math Teacher 2019-May 2023
RUSSIAN SCHOOL OF MATHEMATICS - RESTON AND HERNDON, VA

- Substituted high school geometry, middle school algebra, and elementary school arithmetic
- Taught courses on math competition preparation, preparation for the IOWA test, introduction to HTML & JavaScript, and introduction to Python
- Conducted expense accounting for the entire school

Senior Tutor 2015-2019

RUSSIAN SCHOOL OF MATHEMATICS - WINCHESTER, MA AND RESTON, VA

- Tutored kids ranging K-12 in: geometry, algebra and math team preparation
- Printed assignments for teachers leading up to class

Projects

AI-Assisted Journaling - Graduate Project Fall 2023

PYTHON, FLASK, HTML, JAVASCRIPT, BOOTSTRAP, MYSQL, GIT, CHAT GPT API

- Led team of three to create multi-user web application for journaling
- Utilized Chat GPT API for summarizing and leading journaling process
- Created user authentication system to facilitate multi-user application use
- Designed/deployed SQL database with user and encrypted journal information on Google Cloud (GCP)

Currency Profitability Model - Mathematical Competition in Modeling 2022C February 2022

R, MATLAB, LaTeX, GIT

- Created models and a report with team to Meritorious Winner (**top 8%**) finish
- Applied Q-learning and custom time series forecasting model with hand-crafted features
- Visualized time series model results using ggplot and pyplot

Publications

Palamarchuk, D., Williams, L., Mayer, B., Danielson, T., Faust, R., Deschaine, L., North, C., (Jan. 2025). "Visualizing Temporal Topic Embeddings with a Compass." In: IEEE Transactions on Visualization and Computer Graphics 31.1, pp. 272–282. DOI: 10.1109/TVCG.2024.3456143.

Conferences

Scerri, A., Bromley-Trujilo, R., Hao, F., Alexander, A., Paragas, C. L. S., **Palamarchuk, D.,** (May 2023). "Who influences climate and energy policy in VA?" In: State Politics and Policy Conference 2023.

Mukora, V. K., Gillespie, J., **Palamarchuk, D.,** (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.

Honors

Finalist for 2024 Torgersen Graduate Student Research Excellence Award	April 2024
VT Outstanding CMDA Senior award	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

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

Tools: MySQL, sqlite, networkx, TensorFlow, Numpy, Tidyverse, Pandas, flexdashboard, plotly, d3, GIT, LaTeX, Linux, vim, OpenMP, MPI, PyGame

Spoken Languages: English (native), Russian (native), Spanish (proficient)