Konstantinos Pantazis

+30 695 5532 846 | konstantinos_pantazis@hotmail.com
KONSTANTINOS HOMEPAGE | KONSTANTINOS PANTAZIS

WORKING EXPERIENCE

Johns Hopkins University *Postdoctoral Fellow (Applied Math & Stat)* June 2022 — June 2023
Baltimore, USA

- Investigated the influence of preprocessing non-network data into time series of networks in a neuroscience application (Eschbach data) using R.
- Employed statistical analysis to reveal novel connections between network embeddings and traditional methods like PCA.

Microsoft *Data science internship* May 2022 — Aug 2022
Seattle, USA

- Leveraged Python to preprocess labeled network streaming data and implement deep graph similarity learning methods (e.g., SimGNN). This enhanced security incident detection by enabling quick identification of other similar structures in real-time.
- Developed interactive Power BI dashboards using graph-based representations of thousands of security incidents (M365D correlation engine). These dashboards facilitated the visualization of complex relationships and dependencies, leading to improved threat identification and risk quantification.

Army Research Laboratory *Machine Learning internship* June 2021 — Aug 2021
Washington DC, USA

- Analyzed existing research on Recommender Systems to identify key trends and challenges. Leveraged this analysis to propose a learning algorithm tailored for collaborative prioritization and filtering information objects (IOs) withing dynamic contextual environments.

EDUCATION

Postdoctoral (AMS) Fellow 2022 — 2023
Department of Applied Mathematics and Statistics, Johns Hopkins University, USA

PhD in Mathematics 2017 — 2022
University of Maryland, College Park, USA

B.Sc. in Mathematics 2011 — 2016
National & Kapodistrian University of Athens, Greece

TECHNICAL SKILLS

Programming: Python (NumPy, Pandas, Networkx, Matplotlib, Seaborn, Scikit-learn), R (Advanced knowledge), MATLAB (Numerical Optimization, Linear Algebra, Machine Learning), SQL

Software: MS Office (Excel, Word, PowerPoint, Outlook), Power BI, GitHub, Jupyter Notebook

Operating Systems & Tools: Anaconda, Windows, Google Sheets, LaTeX, Visual Studio Code

RESEARCH EXPERIENCE Sep 2018 — May 2023

- Pioneered a novel embedding procedure for statistical inference. Implemented the technique on real-world Aplysia californica brain data, enabling the detection and analysis of subtle stimuli responses (spikes) and their decay in intensity – a capability beyond previous embedding approaches.
- Designed and deployed an optimization algorithm for analyzing data across multiple networks (DARPA MAA funded). The algorithm achieved over 86% accuracy in identifying shared users across YouTube, Twitter, and

Konstantinos Pantazis

+30 695 5532 846 | konstantinos_pantazis@hotmail.com
KONSTANTINOS HOMEPAGE | KONSTANTINOS PANTAZIS

FriendFeed. Additionally, this algorithm also demonstrated its effectiveness in large-scale knowledge graph signal recovery (MAA-AIDA Data Release V2.1.2, 100K vertices) achieving superior performance in some cases and comparable results to other filtering algorithms in others.

- Developed a novel graph matching technique that achieved state-of-the-art matching accuracy (0.94) on a real-world dataset of human connectomes from the HNU1 data repository. This accuracy was validated through rigorous out-of-sample testing, demonstrating the technique's effectiveness and generalizability.
- Unveiled and analyzed the impact of hidden correlations in joint network embedding methods on downstream inferential tasks (clustering, classification, effective sample size) using both theoretical and experimental approaches with synthetic and real-world data.

TEACHING EXPERIENCE

Course Instructor, Johns Hopkins University 2022 — 2023
Designed course content and lectured undergraduate courses in Probability, Statistics and Optimization.

Teaching Assistant, University of Maryland & University of Massachusetts 2017 — 2022
Lead discussions for undergraduate courses in Probability, Statistics, Differential Equations, Linear Algebra, and graded assignments for graduate courses in Real Analysis, Numerical Analysis and Pattern Recognition.

PUBLICATIONS

1. **"Clustered Graph Matching for Label Recovery and Graph Classification"** **IEEE Transactions on Network Science and Engineering (2023)**
2. **"The Importance of Being Correlated: Implications of Dependence in Joint Spectral Inference across Multiple Networks."** **Journal of Machine Learning Research (2022)**
3. **"Multiplex graph matching matched filters."** **Applied Network Science (2022)**

CONFERENCES

- **CMStatistics 2022**: 15th International Conference of the ERCIM WG on Computational and Methodological Statistics (*Talk*)
- **NeurIPS 2022:** Thirty-sixth Conference on Neural Information Processing Systems (*Poster*)
- **2021 Joint Statistical Meetings** (*Talk*)
- **NETWORKS 2021: A Joint Sunbelt and NetSci Conference** (*Talk*)

MISCELLANEOUS

Foreign Languages: **English** (Full professional proficiency), **Spanish** (Limited professional proficiency)

Coding courses: **Computational Statistics with R** (UMD 2020), **Matrix Calculus** (MIT 2020), **Introduction to Statistical Computing with R** (UMASS 2019), **Machine Learning with Python** (UMASS 2019**), Introduction to Computation and Programming Using Python, with Application to Understanding Data** (MIT 2019), **The Data Scientist's Toolbox** (Coursera 2018), **Computer Programming with MATLAB** (2018)

Certifications: **NLP with Python for Machine Learning Essential Training** (LinkedIn 2024), **SQL Essential Training** (LinkedIn 2024)

Extracurricular: **Probationary/Associate member** of the Hyattsville Volunteer Fire Department, Inc (2021-2022), ***Blood*/Platelet donor** at American Red Cross (2020-2023)