# ANTON ALYAKIN

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## EDUCATION

**Washington University in St. Louis** *[Aug 2021, May 2026]*
*Doctor of Medicine* *(Expected)*
One-Year Research without Degree Program (MD5)

**Johns Hopkins University** *[Jan 2019, Dec 2019]*
*Master of Science in Engineering*
Applied Mathematics & Statistics

**Johns Hopkins University** *[Aug 2015, May 2019]*
*Bachelor of Science*
Computer Science
Applied Mathematics & Statistics

## RESEARCH

**New York University** *[Mar 2024, Mar 2025]*
*Visitng Medical Student Researcher*
Department of Neurosurgery / OLAB / Leuthardt Lab
Faculty Supervisors: Eric K. Oermann & Eric Leuthardt

**Johns Hopkins University** *[Jan 2020, Mar 2021]*
*Assistant Research Engineer*
Department of Applied Mathematics & Statistics / Neruodata Lab
Faculty Supervisors: Carey E. Priebe & Joshua T. Vogelstein

**Johns Hopkins University** *[Jun 2019, Dec 2019]*
*Graduate Research Assistant*
Department of Applied Mathematics & Statistics
Faculty Supervisor: Carey E. Priebe

**Johns Hopkins University** *[May 2017, May 2019]*
*Undergraduate Research Assistant*
Department of Computer Science
Faculty Supervisor: Suchi Saria

## TEACHING

**Johns Hopkins University**
*Teaching Assistant*
580.475 Biomedical Data Science *Fall 2019*
553.430/630 Introduction to Statistics *Spring 2019*
553.436/636 Data Mining *Fall 2018*

## PUBLICATIONS

1. **A. Alyakin**, J. Agterberg, H. Helm, and C. E. Priebe, *Correcting a Nonparametric Two-sample Graph Hypothesis Test for Graphs with Different Numbers of Vertices with Applications to Connectomics*, Applied Network Science, 2024. [arXiv] [journal] [code]
2. M. Powell, C. Clark, **A. Alyakin**, J. T. Vogelstein, B. Hart, *Exploration of Residual Confounding in Analyses of Associations of Metformin Use and Outcomes in Adults With Type 2 Diabetes*, JAMA Network Open, 2022. [arXiv] [journal]
3. F. Rahman, N. Finkelstein, **A. Alyakin**, N. A Gilotra, J. Trost, S. P. Schulman, S. Saria, *Using Machine Learning for Early Prediction of Cardiogenic Shock in Patients with Acute Heart Failure*, Journal of the Society for Cardiovascular Angiography & Interventions, 2022. [arXiv] [journal]
4. J. Chung†, B. Varjavand†, J. Arroyo, **A. Alyakin**, J. Agterberg, M. Tang, J. T. Vogelstein, C. E. Priebe, *Valid Two-Sample Graph Testing via Optimal Transport Procrustes and Multiscale Graph Correlation with Applications in Connectomics*, Stat, 2021. [arXiv] [journal] [code]
5. K. Marchisio, Y. Park, A. Saad-Eldin, **A. Alyakin**, K. Duh, C. Priebe, P. Koehn, *An Analysis of Euclidean vs. Graph-Based Framing for Bilingual Lexicon Induction from Word Embedding Spaces*, Findings of the Association for Computational Linguistics: EMNLP 2021. [arXiv] [journal] [code]

## DISSERTATIONS

1. **A. Alyakin**, *Robust Hypothesis Testing of Location Parameters using Lq-Likelihood-Ratio-Type Test in Python*, a thesis submitted to The Johns Hopkins University in conformity with the requirements for the degree of Master of Science in Engineering, 2019. [arXiv] [library] [code]
2. **A. Alyakin**, *Motif Discovery in the Irregulary Sampled Time Series Data*, a thesis submitted to The Johns Hopkins University in conformity with the requirements for Senior Honors Thesis in Computer Science, 2019.

## PREPRINTS

1. **A. Alyakin**, Y. Qin, and C. E. Priebe, *LqRT: Robust Hypothesis Testing of Location Parameters using Lq-Likelihood-Ratio-Type Test in Python*, submitted, 2019. [arXiv] [code]

## SOFTWARE

**microsoft/graspologic** (previously **neurodata/graspy**)

Contributor to and maintainer of **graspologic**, an open-source Python package that provides utilities and algorithms for doing statistical analyses on graph- and network-valued data. Notable contributions include latent distribution test implementation and the align module.

**alyakin314/lqrt**

Author and maintainer of **lqrt**, a Python package that implements the Robust Hypothesis Testing of Location Parameters using Lq-Likelihood-Ratio-Type Test.

**Data-Driven Discovery of Models Library - JHU Graph Primitives**

One of the primary mainterners of the repository that is JHU's contribution to the D3M's library of selectable primitives that are used as basic building blocks in the automated model discovery process. JHU's primitives are aimed at tackling machine learning problems with graph, or netowrk, inputs, such as Vertex Classification, Community Detection, Link Prediction and Seeded Graph Matching.

## AWARDS

**Johns Hopkins University**

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| Applied Mathematics & Statistics Prize for Outstanding Master's Research | *2020* |
| Applied Mathematics & Statistics Achievement Award | *2019* |
| Undergraduate General Honors | *2019* |
| Undergraduate Departmental Honors with Thesis, Computer Science | *2019* |
| Undergraduate Departmental Honors, Applied Mathematics & Statistics | *2019* |
| Whitening School of Engineering Dean's List (8/8 Semesters) | *2015-2019* |

## SKILLS

**Languages** (in order of proficiency):

Python (including PyTorch and TensorFlow), English, Russian, R, Matlab, Java, C++.

**Other skills**:

LaTeX, Git, Databases (PostgreSQL, BigQuery), Bouldering (7a/V6), Lead climbing (6b/5.10).