SAMUEL A. KROGER

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EDUCATION

Rice University, Houston, Texas 2019 – present

PhD candidate, Computational applied Mathematics and Operations Research

Advisor: Illya V. Hicks, PhD, MA

Rice University, Houston, Texas 2019 – 2022

Master of Arts, Computational applied Mathematics and Operations Research

Advisor: Illya V. Hicks, PhD, MA

Bates College, Lewiston, Maine 2016 – 2019

Bachelor of Arts (Mathematics) Spring 2019

RESEARCH / WORK EXPERIENCE

Anchored k-core, Rice University 2020 – 2022

I have submitted a paper on using integer programming the anchored k-core problem. This NP-hard problem is vital to understand the resilience of social and economic networks. In this work we propose the first exact method to solving the anchored k-core problem.

Minority-majority districting, Rice University 2020 – present

In this ongoing work we identify geographically compact majority-minority political districts using benders decomposition. Solving this problem efficiently is paramount to aiding policy makers attempts to create fair districting maps for the house of representatives.

Developer, Tradesmith Capital, Houston, Texas 2017 – 2019

I created a package in R that normalizes and downloads data from the Federal Reserve Bank of St. Lewis to a SQL database. It is currently being implemented to update thousands of economic time series data within Tradesmith Capital. I also created a feature in Python that uses the Fourier transform to reveal cyclic patterns in time series data.

Research for Raj Saha, PhD, MS, Professor of Physics, Bates College, Lewiston, Maine 2017 – 2018

I downloaded data from the Global Terrestrial Network for Permafrost (GTN-P) to create models of how heat transfers between different depths of permafrost using partial differential equations.

Research for Blake Sturtevant, PhD, Professor of Physics, Bates College, Lewiston, Maine 2017

I applied various polynomial fitting routines in Python, MATLAB, and R to large data sets collected from the Los Alamos National Lab.