# Xiaonan Hu

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(757) 585-5649

## EDUCATION

**Duke University,** Computer Science Department, Durham, NC — Expected May 2021
- PhD in Computer Science, advisor Dr. Ronald Parr
- Working on Reinforcement Learning with Professor Ron Parr

**College of William and Mary**, Williamsburg, VA — May 2016
- Bachelor of Science in Mathematics with Honor and Computer Science
- GPA: 3.75/4.00, Mathematics: 3.82, Computer Science: 3.85

## PUBLICATIONS

"Ranks of Permutative Matrices", Xiaonan Hu, Charles Johnson, Caroline Davis, Yimeng Zhang, *Special Matrices,* Volume 4, 2016.

"Row and Column Distributions of Letter Matrices", Xiaonan Hu, Charles Johnson, *College of William and Mary Undergraduate Honor Thesis*, paper 906, 2016.

## RESEARCH EXPERIENCE

**Inverse Reinforcement Learning**, Durham, NC — Aug 2016 - Present
*Researcher*

**Pacific Northwest National Laboratory,** Richland, WA — Summer 2016
*Intern*
- Built an interface in C++ connecting profilers MIAMI and Dyninst to realize the machine-independent fine-grain analysis of binary programs

**CCTLib**, Williamsburg, VA — Summer 2015
*Researcher and Programmer*
- Built visualization tool in C++ for CCTLib (call path collection library) to display calling context trees of each thread in client programs with established structural format
- Remodeled the storage structure of CCTLib's data to simplify the relations of calling context trees

**Honor Thesis in Matrices,** Williamsburg, VA — Summer 2015-Spring 2016
*Researcher*
- Created geometric representation of the spectra of four dimensional permutative matrices through mesh-grid using Matlab
- Resolved connections between entry permuting patterns with quantitative matrix entry distributions using graphs

**Undergraduate Research Fellowship Program in Matrix Analysis,** Williamsburg, VA — Summer 2014
*Researcher*
- Explored the permutative matrices' properties by developing special matrix-partition methods, quantified entries' distributions and wrote proofs for open conjectures
- Designed Python and Matlab programs to testify logical deductions of proofs, generate the full database for permutation-equivalent matrices and discover further properties of matrices from data results

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## WORK EXPERIENCE

**D3 Community Outreach,** Durham, NC Fall 2016
*Volunteer and Data Analyst*

- Utilized Machine Learning algorithms on participants' records to discover ways to help high school drop outs passing the GED test

**Pinnacle Wealth Brokers (EMP),** Vancouver, BC Summer 2013
*Intern*

- Represented *Pinnacle* in *2013 Asian Investment Forum* in Canada, demonstrated products to clients, achieved promising relationship with about 30 clients

## PRESENTATIONS

*Young Mathematicians Conference,* Columbus, OH; Fall 2015

- Present the research on Ranks of Permutative Matrices at Ohio State University

*SUMS conference*, VA Fall 2015

- Present the research on Ranks of Permutative Matrices at James Madison University

## SKILLS

- Language Skills: English (fluent) and Mandarin (native)
- Computer programming languages: Java, C++, C, Python, Matlab, R, Swift

## HONORS AND MEMBERSHIPS

Phi Beta Kappa Society Member, Alpha Chapter of Virginia Since 2016
Mathematics Honors, College of William and Mary Department of Mathematics 2016
Dean's List, College of William and Mary 2014-2016
Association for Computing Machinery, Since 2015

## LEADERSHIP AND OTHER INTERESTS

**President ,** *William and Mary Shotokan Karate Club,* Williamsburg, VA Spring 2013-Spring 2015

- Represented *Karate Club* to attend the US East Coast University Tournament and won two first places in Kata Presentation and sparing; volunteered laboring for fundraising twice during each semester

**Member,** *William and Mary Bridge Club,* Williamsburg, VA Fall 2012-2015
**Competitor,** *William and Mary Business Plan Competition,* Williamsburg, VA Spring 2013

- Constructed a business plan for *Insider,* an online leisure house broker in China and did elevator pitch

**International Sommelier Guild** (ISG) Wine Fundamentals Certificate Level 2, 2012
**Advanced Tracking and Awareness** class completion from Tom Brown Tracker School 2016