

# Christian Ikeokwu

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RESEARCH INTERESTS     algorithms, economics and computation, artificial intelligence, learning theory  
multi-agent systems, fairness and social equity.

EDUCATION     **Oberlin College and Conservatory**, Oberlin, Ohio

B.A., Mathematics and Computer Science, May 2021  
Minors in Economics and Statistical Modelling  
Major GPA: 3.91/4.00  
Overall GPA: 3.84/4.00

RESEARCH EXPERIENCE     **Smoothness and Composability of ROSCAS with Concave utility (working title)**

*Harvard University*, Cambridge, Massachusetts (Remote due to COVID-19)

Undergraduate Researcher, Summer 2020.

- Studied the allocation mechanisms of Rotating Savings and Credit Associations (Roscas)
- Developed several smoothness type inequalities for the significant ways in which Rosca auctions deviate from the standard auction formats
- Proved sequential composition theorems for Rosca auctions
- Proved smoothness type inequalities and composition theorems for rosca auctions with concave utility functions
- Advisors: [Professors Rediet Abebe & Sam Taggart](#)

**Algorithmic Perspectives on Informal Financial Organizations**

*Oberlin College Computer Science Department*, Oberlin, Ohio

Undergraduate Researcher, Spring 2020

- Studied the structure and properties of social savings systems
- Developed a Ruin Processes model of "Savings Circles" and proved theoretical properties of the model
- Leveraged parallel computing to speed up simulations for empirical results
- Advisors: [Professors Rediet Abebe & Sam Taggart](#)

**Improving Welfare Bounds for First-Price Auctions**

*Oberlin College Computer Science Department*, Oberlin, Ohio

Undergraduate Research Assistant, Jan 2019 - Dec 2019

- Studied the equilibria of First Price Auctions with low welfare.
- Created simple closed form equation for computing welfare contribution from specific slices of an agents bid distribution
- Developed and implemented numerical techniques for optimizing worst case first price auction instances.
- Advisor: [Professor Sam Taggart](#)

## **Income Share Agreements (ISA) and Blockchain Protocols**

*Oberlin College Economics Department*, Oberlin, Ohio

Undergraduate Researcher, Spring 2018

- Studied the use of ISA as an alternative education funding tool that aligned college and student incentives
- Researched smart contracts and implemented an ISA issuance protocol on the Ethereum block-chain
- Created theoretical financial derivatives on ISAs that allowed agents to hedge idiosyncratic income risk
- Mentor: [Professor John Duca](#)

## **Distributed Computing**

*Oberlin College Computer Science Department*, Oberlin, Ohio

Undergraduate Researcher, Winter 2018

- Overhauled supercomputer nodes by replacing hardware, installing operating systems and implementing distributed computing frameworks with Spark.
- Implemented a distributed versions of simple regression techniques using functional programming in Scala
  - [Professor Adam Eck](#)

## PROFESSIONAL EXPERIENCE

**Morgan Stanley**, New York, New York

Quantitative Researcher, Summer 2019

- Researched and created a statistical model of order flows in the Agency MBS TBA market
- Designed and implemented data processing pipelines to improve the efficiency of the Agency desk
- Developed trading algorithms around my model that could generate \$13M in profits over 2 years

**Two Sigma**, Houston, Texas

Software Engineering Intern, Summer 2018

- Developed and implemented a payment gateway in Java compliant with the SWIFT protocol that simplified the transfer of money to our margin providers.
- Designed front-end web and excel interfaces to the service that displayed data and analytics for diagnosing and preventing errors in wire transfers
- The service is utilized over 550+ times\week to transfer \$4.5B weekly.

**Teevo**, Lagos, Nigeria

Software Engineer, Sep 2016 - Mar 2017

- Developed Palm Tasks an internal software tool used by office administrators to track and improve productivity & task management, which increased tasks completed by 20%
- Applied data analytics and machine learning for the generation of ideas to increase engagement and retention of teenagers on the Teevo suite of (mobile and online) products

TEACHING	Teaching Assistant, Algorithms (CSCI 280) <ul style="list-style-type: none"> <li>• Led weekly office hours to help students learn algorithm concepts and proof-writing techniques</li> <li>• Graded problem sets and gave targeted feedback for improving proof writing, algorithm design and analysis.</li> <li>• Spring 2020, Fall 2020</li> </ul>
	Lab Helper \ POC Lab Helper <ul style="list-style-type: none"> <li>• Data Structures (CSCI 151), Introduction to Computer Science (CSCI 150)</li> <li>• Engaged in 6+ hours lab tutoring sessions weekly for groups of 20-25 students.</li> <li>• Guided and aided students in developing software design proficiency identifying \ resolving bugs, and peer programming.</li> <li>• Organized and led priority office hours for underrepresented groups in computing.</li> <li>• Fall 2018, Spring 2019, Fall 2020</li> </ul>
	Teaching Assistant, Introduction to Computer Science (CSCI 150) <ul style="list-style-type: none"> <li>• Graded and provided feedback on student lab assignments and projects</li> <li>• Spring 2018</li> </ul>
	Teaching Assistant, Data Visualization (STAT 209) <ul style="list-style-type: none"> <li>• Graded and provided feedback on student lab assignments and projects</li> <li>• Fall 2019</li> </ul>
AWARDS	Richard Tapia Diversity in Computing Conference Scholarship Awarded over \$1500 to attend the Tapia Conference in 2019 & 2020
	John F. Oberlin Scholarship Awarded over \$60,000 annually to top members of the incoming class in 2017
	Teevo Special Recognition for Innovation Award For modernizing the infrastructure of Teevo's digital products in 2016
TALKS AND PRESENTATIONS	Algorithmic Perspectives on Informal Financial Organizations MD4SG Inequality Working Group, April 2020
	Deep Learning for Set Cover Approximation Algorithm Classification Oberlin College, Oberlin, Ohio, Dec 2019
	Extracting Signals from the Agency TBA Market Morgan Stanley, New York, New York, August 2019
	Wires Gateway: A Modern Framework for Processing Wire Transfers Two Sigma, Houston, Texas, August 2018
SERVICE	Computer Science Majors Committee (CSMC) African Students Association (ASA) Student Finance Committee (SFC) Co-Chair of Oberlin Student Finance and Investment Club (OSFIC) Founder and President of Oberlin Computer Science and Hackathon Club (OHACS) Student Senate International Students Working Group

SKILLS            Python, L<sup>A</sup>T<sub>E</sub>X, R, C++  
Java, Mathematica, Bash

REFERENCES     Available upon request