# VALENTINA M. SEMENOVA

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## RESEARCH INTERESTS

- Machine learning (GNN, NLP techniques), finance, networks, big data in economics

## EDUCATION

**OXFORD UNIVERSITY, PHD CANDIDATE,** Mathematics (expected) 2019 – 2024
- Supervised by: J. Doyne Farmer (*Institute for New Economic Thinking*), Xiaowen Dong (*Oxford Man Institute for Quant Finance)*

**COLUMBIA UNIVERSITY, MASTER OF SCIENCE,** Operations Research 2017 – 2019
- Student of Professor Yuri Faenza researching discrete optimization

**DARTMOUTH COLLEGE, BACHELOR OF ARTS,** Majors: Mathematics, Economics 2009 – 2013

## PREVIOUS POSITIONS

**PALANTIR TECHNOLOGIES,** Deployment Strategist 2015 – 2017
- *Drove Palantir's expansion in the Asia Pacific region*
- *Developed Palantir's joint venture with Credit Suisse targeted at mitigating financial operational risk*

**GOLDMAN SACHS,** Algorithmic Volatility Trader 2013 – 2015
- *Proposed and executed successful trading strategies for a portfolio of options on over 1200 stocks*

## AWARDS

- Winner of *Complexity in Social Macroeconomics* competition, 2022
- Second place prize in *Rebuilding Macroeconomics* paper competition, 2021
- *Robert F. Gartland Fellowship* (Columbia University) for academic excellence and professional promise

## SELECTED RESEARCH

**REDDIT'S SELF-ORGANIZED BULL RUNS** *(with Julian Winkler)*

- This paper develops an empirical and theoretical case for how 'hype' and information sharing among retail investors can drive large asset price fluctuations
- We apply NLP techniques to a novel dataset from the WallStreetBets subreddit to extract information about investor behaviors

- ***Coverage: Financial Times, LSE Business Review***
- ***Link: https://arxiv.org/abs/2104.01847***

**DEBAGREEMENT** *(with John Pougue-Biyong)*

- We introduce and analyze a dataset of 42,894 comment-reply pairs from Reddit, annotated with agree, neutral or disagree labels
- The data is sourced from five forums on Reddit: BlackLivesMatter, Brexit, Climate, Democrats, Republican

- ***Published in NeurIPS 2021***
- ***Link: https://openreview.net/forum?id=udVUN__qFO***

**FROM MICRO TO MACRO: THE SOCIAL DYNAMICS BEHIND ECONOMIC CHANGE** *(with John Pougue-Biyong)*

- This paper outlines and tests a novel signed, temporal clustering algorithm
- The algorithm is applied to social media data to detect polarization and track the link between polarization and the macroeconomy

- ***Link: https://www.rebuildingmacroeconomics.ac.uk/copy-of-prize-complexity-macro-1***

**THE DEVELOPMENT OF NATIONS AND GLOBAL TRADE: A MACHINE LEARNING PERSPECTIVE** *(with Xiaowen Dong)*

- We use a Graph Neural Network algorithm to identify drivers of economic growth, from a trade network perspective

## SELECTED CONFERENCES AND PRESENTATIONS

- NeurIPS 2021
- Royal Economic Society (organizer of special session)
- Networks 2021
- Alan Turing Institute – Economic Data Science Interest Group
- Santa Fe Institute – Annual Risk Meeting
- NetSci 2022
- Institute of Mathematics and its Applications – the Mathematical Challenges of Big Data 2022
- American Finance Association – General Meeting (Poster Session) 2023

## TEACHING

- Teaching Assistant at Columbia University in *Data Analytics* and *Business Analytics and Management*
- Teaching Assistant and Tutor at Oxford University in *Networks* and *Logic*
- Co-adjunct professor at Webb University in *Data and Python*

## MENTORING / SUPERVISION

- Founding member and editor of Oxford's *St. Catherine's Academic Review* journal
- Student representative on the *Committee for Graduate Studies* and the *Equality, Diversity and Inclusion Committee*
- Peer Supporter and Social Secretary at Oxford's St. Catherine's Middle Common Room
- Co-supervised three undergraduate / master's students in their thesis work and broadening projects

## SKILLS, ACTIVITIES AND INTERESTS

**ENTREPRENEURSHIP:** Co-founder of a biotech startup targeted at increasing human lifespan (2017)
**LANGUAGES:** fluent in Russian; conversational in French, Spanish
**OTHER ACTIVITIES AND INTERESTS:** Alumna of the Dartmouth Varsity Sailing team
**PROGRAMMING:** Python (machine learning packages: NLP BERT / Transformers, Pytorch Geometric), R