Sarvar Abdullaev | PhD

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Education

King's College London **UK**
PhD in Computer Science *2011–2016*
Thesis: Pricing Options via Double Auctions
Covered Topics:
- Agent-based Modelling
- Option Pricing
- Auction Theory
- Automated Trading
- Computer Simulation
- Mechanism Design

Dongguk University **South Korea**
MSc in Computer Science, GPA – 4.38/4.5 *2007–2009*
Thesis: THIEF: THe Intelligent Events Fetcher
Modules Taken:
- Applications of Artificial Intelligence (A0)
- Theory of Software Engineering (A+)
- Theory of Database Systems (A+)
- Computer Graphics (A0)
- Distributed Processing (A+)
- Current Topics in Computer Science (A+)
- Human Computer Interface (A+)
- Performance Evaluation of Systems (A+)

University of Westminster **UK**
BSc (Hons) in Business Computing, 2:1 *2003–2006*
Modules Taken:
- Rapid Applications Development (80/100)
- Decision Support and Data Mining (62/100)
- Mathematics for Economists (72/100)
- Financial Management (63/100)
- Web Applications Development (75/100)
- Database Theory and Practice (73/100)
- Systems Analysis (52/100)
- Fixed Interest Securities and Derivatives (72/100)

Experience

Inha University in Tashkent **Uzbekistan**
Associate Professor *2016–Present*
- Taught undergraduate courses such as *Intro to Computer Science*, *Game Theory*, *Creative Engineering Design*, *Databases*, *Web Programming* and *Application Programming*
- Founded 3D printing lab for Creative Engineering Design course
- Organized open hackathons and public workshops attracting more than 200 participants

New Uzbekistan University **Uzbekistan**
Adjunct Professor *2021–Present*
- Taught `Nand2Tetris` and *Interaction Design* courses.
- Designed the curriculum of Software Engineering, Cybersecurity and AI/Robotics programs
- Assisted in recruiting new faculty members for the School of Computer Science
- Founded 3D printing and VR/AR labs

King's College London **UK**
Graduate Teaching Assistant *2014–2015*
- Prepared tutorials for courses: *Introduction to Artificial Intelligence, Data Structures* and *Practical Programming*
- Conducted seminars and graded student homework assignments

Westminster International University in Tashkent **Uzbekistan**
Lecturer *2009–2011*
- Taught undergraduate courses such as: *Software Design Patterns, Web Applications Development, E-Commerce, Business Information Systems*
- Supervised course projects of undergraduate students
- Trained students for ACM ICPC contest

cBizSoft, Inc **USA**
Remote Software Engineer *2008–2022*
- Developed Exelare Applicant Tracking System which processes more than 20K resumes and 400 jobs a day
- Integrated Exelare with external APIs such Monster, CareerBuilder, Indeed, Dice, Fieldglass, SalesForce, Bandwidth, DocuSign, etc
- Developed back-end services using ASP.NET MVC and front-end using Angular
- Implemented mobile version of Exelare

Dongguk University **South Korea**
Research Assistant *2007–2009*
- Contributed to research and development projects of the centre
- Published research outcomes in relevant journals and conferences
- Screened papers submitted to conferences and journals issued by the centre
- Maintained of system infrastructure, ticketing and fixing web applications of the centre

Side Projects

Startup Co-founder

`amudar.io` **(2020 - present)**: Agritech startup in Uzbekistan which specializes in manufacturing weather stations, pheromone traps, phytotrons and other greenhouse related equipment for energy efficient climate control. Apart from hardware solutions, we develop software for forecasting the pest outbreaks using data from smart pheromone traps and weather stations. Startup has raised $40K in pre-seed funding and more than $100K in the first round of seed funding. It continues gaining traction as the number of local clients increase.

Private Contractor

UN Consultant for ACCRF Project (2020-2021): The project is proposes a complex IoT solution for monitoring meteorological data and predicting the development of diseases and insects using advanced time-series forecasting methods. Also it collects data from the network of smart pheromone traps and automatically detects insects from images using deep learning technologies. The solution assists farmers about potential threats posed by various pests and diseases in their farms.

World Bank Consultant (2020): Participated as a consultant to facilitate the organization of "Covid-19 Challenge" aimed at attracting start-ups for battling the social and the economical consequences of Covid-19 in Uzbekistan. I also delivered a talk on the latest advancements in network epidemiology and served as an expert in the selection process.

World Bank Consultant (2019): Participated as a consultant to facilitate the organization of "Open

Data Challange Hackathon" aimed at attracting developers for working with publicly available open data. I also conducted workshops and tutorials on analyzing data using Python. Mentored the participants during hackathons.

UN Consultant for "Aid for Trade" Project (2018): Developed a software solution for early notification of farm owners on the spread of diseases and pests on their farmlands. The solution has been successfully deployed in Turakurghan district of Namangan region, Uzbekistan. (Project ID: 00088102)

UN Consultant for PARDT Project (2016, 2017 and 2018): Participated as a consultant to facilitate the organization of "Open Data Challange Hackathon" aimed at stimulating the use of open data in software development. I also conducted series of workshops and tutorials on analyzing data using Python and mentored the participants during the hackathon. (Project ID: 00105460-00106736)

Awards

2022: Islamic Development Bank Postdoctoral Scholarship in Sustainable Agriculture. Research is undertaken at NRU TIIAME.

2017: Best Paper Award in 4th International Conference on Big Data Applications and Services

2014: Winner of TechCrunch Disrupt Hackathon 2014 for modeling and implementing the 'Infected Flight' simulator which forecasts the spread of diseases using SIR model and the network of airports throughout the world

2011: Islamic Development Bank High-Technology Merit Scholarship which covered my PhD research at King's College London

2007: Korean Government's IITA Scholarship which covered my Master's programme fees and living expenses in South Korea

2005: Finalist in Imagine Cup. International IT contest sponsored by Microsoft

2005: Third Place in ACM Programmers Contest in Uzbekistan

2003: WIUT Full Scholarship which covered my undergraduate tuition fees

Certificates

ML Applications in Medicine **UK**
OxfordML Summer School *2020*
Summer school has been organized online, and specialized in teaching recent applications of ML in medicine and environmental sciences. It involved eminent academics of the field from CIFAR and Said Business School, etc

Deep Reinforcement Learning **Poland**
EEML Summer School *2020*
Summer school has been organized online, and specialized in teaching recent advancements in deep reinforcement learning. It involved key academics of the field from DeepMind, Facebook AI, University of Amsterdam, etc

Bayesian Machine Learning **Russia**
DeepBayes Summer School *2018*
Summer school has been organized by Russian's High School of Economics (HSE), Samsung Research and Skoltech. Lectures were delivered by top scholars in the field of Machine Learning such as Prof. Max Welling, Prof. Dmitry Vetrov, and researchers from DeepMind.

Entrepreneurship for Scientists **UK**
Enterprisers Summer School *2012*

Summer school has been organized by the Judge Business School (The University of Cambridge) for PhD and Post-doctoral researchers in STEM fields to attract them more into entrepreneuriship and teach them necessary skills for transforming their knowledge and research experience to end products.

Programming Languages

Advanced: C#/VB.NET (WPF, ASP.NET MVC, Web API, Entity Framework, Prism, Azure), Javascript (Angular, TypeScript, NgRx, PrimeNg, Material Design, jQuery, Webpack)
PHP (Laravel, Homestead, Valet, Vagrant, Envoy, MySQL)

Intermediate:
Python (NumPy, Pandas, SciPy, Scikit-learn, Matplotlib, Plotly, Flask, PyTorch, TensorFlow), NetLogo, Java, Prolog, R (dplyr, caret, ggplot2, yuima), MATLAB

Theoretical Knowledge

Computer Science

Advanced: Algorithms and Data Structures, Artificial Intelligence, Multi-Agent Systems, Software Engineering, Web Programming

Intermediate: Machine Learning, Database Systems, Numerical Methods

Applied Mathematics

Advanced: Calculus, Linear Algebra, Statistics, Probability Theory, Game Theory, Mechanism Design, Financial Engineering

Intermediate: Convex Optimization, Differential Equations, Operations Research

Research Interests

- Precision Agriculture
- Software Engineering
- Agent-based models
- Game Theory
- Machine Learning
- Multi-agent Systems
- Zero-Intelligent Agents
- Auctions and Market Design

Conference Publications

- S. Abdullaev, Trading Option Portfolios using Combinatorial Exchange, *In Proc. of 4th International Conference on Big Data Applications and Services*, Tashkent, Uzbekistan, August 2017
- S. Abdullaev, P. McBurney, K. Musial-Gabrys, Pricing Options with Portfolio-holding Trading Agents in Direct Double Auction, *In Proc. of 22nd European Conference on Artificial Intelligence*, Hague, Netherlands, September 2016
- S. Abdullaev, P. McBurney, K. Musial-Gabrys, Emergence of Option Prices in Markets Populated by Portfolio-Holders, *In Proc. of 2nd European Workshop on Chance Discovery and Data Synthesis*, Hague, Netherlands, September 2016
- S. Abdullaev, P. McBurney, K. Musial-Gabrys, Direct Exchange Mechanisms for Option Pricing, *In Proc. of 12th European Conference on Multi-Agent Systems*, Springer LNAI, Prague, Czech Republic, December 2014
- S. Abdullaev, P. McBurney, K. Musial-Gabrys, Market-based Mechanism for Option Pricing, *In Proc. of 16th International Workshop on Agent Mediated Electronic Commerce and Trading Agents Design and Analysis*, Paris, France, May 2014

- S. Abdullaev, Y. Nisanbaev, IS Ko, E-commerce Applications of the Hybrid Reasoning Method, *In Proc. of NISS2009*, Gyungju, South Korea, June 2009, pp. 797-801
- S. Abdullaev, IS Ko, Design Steps of Intelligent Events Fetcher (IEF), *In Proc of UCWIT2008*, Gyongju, S. Korea, November 2008, pp. 151-157
- S. Abdullaev, JH Kim, TK Cho, A Study on Visualization Methods of Phyllotaxis Pattern, *In Proc of MITA2008*, Chiang mai, Thailand, July 2008
- S. Abdullaev, IS Ko, A Study on the Aspects of Successful Business Intelligence Systems Development, *In Proc. of ICCS 7th International Conference in Beijing*, Springer-Verlag, LNCS 4490, pp. 729-732, 2007

Journal Publications

- S. Abdullaev, IS Ko, The Performance Evaluation of New Web Caching with Related Content using Colored Petri Net Simulation, *Journal of Society for e-Business Studies*, Vol. 13, No. 3, 2008, pp. 67-83
- S. Abdullaev, IS Ko, YJ Na, An Optimization of CDN using Efficient Load Distribution and RADS Caching Algorithm, *Journal of Universal Computer Science*, Vol. 14, No. 14, 2008, pp. 2329-2342
- S. Abullaev, O. Yugay, IS Ko, Analysis and Implementation of M-commerce in Education for Developing Countries (Uzbekistan case), *Journal of Convergence Information Technology*, Vol.2 Num.3, AICIT, S. Korea, September 2007, pp. 77-88
- S. Abdullaev, IS Ko, A Study on Successful Business Intelligence Systems in Practice, *Journal of Convergence Information Technology*, Vol.2 No.2, June 2007. pp. 89-97
- S. Abdullaev, IS Ko, An Object-oriented Design of a Simulator for Caching with Related Content using LRU, *Advances in Information Sciences and Services*, Vol 2, AICIT, S. Korea, November 2007, pp. 96-103
- S. Abdullaev, IS Ko, YJ Na, RADS: Web Caching Algorithm with Size Heterogeneity of Web Objects, *Advances in Information Sciences and Services*, Vol 2, AICIT, S. Korea, November 2007, pp. 212-218

Invited Talks

- Fundamentals of Machine Learning for Data Analysis, 3rd Jessup Summer School, Westminster International University in Tashkent, Uzbekistan, May 2018
- **Keynote speech:** Prediction markets as a computational mechanism for aggregation of information, *4th International Conference on Big Data Applications and Services*, Tashkent, Uzbekistan, August 2017
- Pricing Options with Portfolio-holding Trading Agents in Direct Double Auction, 22nd European Conference on Artificial Intelligence, Hague, Netherlands, September 2016
- Pricing Options using Auction Mechanisms, Agent Information System Seminar Group, London, November 2014
- Market-based Mechanisms for Option Pricing, 16th International Workshop on Agent-Mediated Electronic Commerce and Trading Agents Design and Analysis, Paris, France, May 2014
- Auction theory and option pricing, 6th BCS Doctoral Consortium, London, May, 2014
- Mechanisms for pricing options, IDB Symposium, Cambridge, May 2014
- Simulation of Option Market using Combinatorial Exchange, Doctoral Poster Presentation, King's College London, October 2013

Doctoral Thesis Summary

Title: *Pricing Options via Double Auctions*

Supervisors: Prof. Peter McBurney & Prof. Katarzyna Musial

Description: PhD thesis describes the design and the simulation of a double auction for pricing European options (i.e. financial contract that gives the right to buy/sell an asset at an agreed price in future in exchange for some premium). It runs multiple automated trading agents with heterogeneous option pricing algorithms in an auction-like format and obtains aggregate prices. The proposed model contrasts with traditional option pricing methodologies such as Black-Scholes and can be used for studying market settings that result in particular outcomes. During my PhD research, I have published four papers in prestigious conferences such as ECAI, EUMAS and AMEC-TADA.

Covered Topics:

- Agent-based Modelling
- Option Pricing
- Auction Theory
- Automated Trading
- Computer Simulation
- Mechanism Design

Master Thesis Summary

Title: *THIEF: THe Intelligent Events Fetcher*

Supervisors: Prof. Byun Jeongyong & Prof. Ko Ilseok

Description: Master thesis describes the design and the development of a web crawler which uses NLP to identify announcements about scientific conferences in Web. First it uses typical NLP algorithms such as bag of words, word collocations and co-occurances, TF-IDF to classify the announcement to either a scientific conference page or not. If the visited announcement is detected as a scientific conference, the crawler will parse the contents of the page using predefined RegEx-based scraping rules and stores the structured results in the database.

Covered Topics:

- Web Crawling
- Search Engines
- Natural Language Processing
- Design Patterns

References

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University of Technology Sydney, Australia
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