Dmytro BOGATOV

Software Development Engineer at Amazon | Ph.D. in Database Security from Boston University

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@ dmytro@dbogatov.org ⚑ Boston, MA ℹ Proudly Ukrainian 🇺🇦

I am originally from Ukraine. I have completed Bachelor's, Master's and Ph.D. in Computer Science. Working on Doctorate, I have defended the thesis "Secure and Efficient Query Processing in Outsourced Databases" [Bog22], advised by George Kollios, Professor at Boston University. I currently work at AWS as a Software Developer. Aside from work, I am serving as a Director for Mriya Inc. ⬈ non-profit, managing shipments of medical supplies and equipment to Ukrainian military, territorial defense and civilians affected by the war.

≡ SKILLS

Programming Languages	C#, **TypeScript** / JavaScript, **Python**, Swift, Java, **C** / **C++**, **SQL**, LaTeX, **Go**, Bash / **zsh**, x86 ASM
Frameworks	**.NET Core**, ASP MVC, **SGX**, xUnit, Angular, **boost::**, Google test / benchmark (C++)
Common skills	**git**, **Gerrit**, docker, HTML, Unix console, VS Code, unit testing
DevOps	Ubuntu / CoreOS / CentOS, **Kubernetes**, CI / CD, automation, NGINX, GitLab admin
Graduate classes	Advanced Algorithms, **Cryptography**, **Advanced Database Systems**, Advanced Operating Systems, **Distributed Systems**, Compiler Design, **Applied Cryptography**, Optimization Methods

🎓 EDUCATION

May 2013	High school (Lyceum 157 in Kyiv) graduation with high distinction. **GPA 4.00**.
Feb 2017	**Bachelor of Science** in Computer Science from WPI with high distinction. **GPA 3.99**.
May 2019	**Master of Science** in Computer Science with specialization in Cyber Security from BU. **GPA 4.00**.
May 2022	**Doctor of Philosophy** in Computer Science (Database Security) from BU. ✏ PUBLICATIONS

✏ PUBLICATIONS

[Cao+24] X. Cao, Y. Li, **D. Bogatov**, J. Liu, and K. Ren. "Secure and Practical Functional Dependency Discovery in Outsourced Databases". In: *2024 IEEE 40th International Conference on Data Engineering (ICDE)*. 2024, pp. 1645–1658. DOI: `10.1109/ICDE60146.2024.00134`.

[Ach+22] O. Acharya, **D. Bogatov**, W. Feng, R. Ghosal, A. Jain, A. O'Neill, and H. Zamani. "**TinyIPE**: Inner Product Encryption for Nearest Neighbor Search". *Work under peer-review*. Oct. 2022.

[Bog+22] **D. Bogatov**, G. Kollios, A. O'Neill, and H. Zamani. "Secure Similarity Search in Outsourced Databases". *Work in progress*. Sept. 2022.

[Bog22] **D. Bogatov**. "Secure and Efficient Query Processing in Outsourced Databases". PhD thesis. May 2022. DOI: `10.48550/arXiv.2206.10753`.

[Bog+21a] **D. Bogatov**, A. D. Caro, K. Elkhiyaoui, and B. Tackmann. "Anonymous Transactions with Revocation and Auditing in Hyperledger Fabric". In: *Cryptology and Network Security*. Springer International Publishing, 2021, pp. 435–459. DOI: `10.1007/978-3-030-92548-2_23`.

[Bog+21b] **D. Bogatov**, G. Kellaris, G. Kollios, K. Nissim, and A. O'Neill. "$\mathcal{E}$psolute: Efficiently Querying Databases While Providing Differential Privacy". In: *Proceedings of the 2021 ACM SIGSAC Conference on Computer and Communications Security (CCS '2021)*. 2021. DOI: `10.1145/3460120.3484786`.

[BKR19] **D. Bogatov**, G. Kollios, and L. Reyzin. "A Comparative Evaluation of Order-Revealing Encryption Schemes and Secure Range-Query Protocols". In: *Proc. VLDB Endow.* 12.8 (2019), pp. 933–947. DOI: `10.14778/3324301.3324309`.

[NBK19] O. Narykov, **D. Bogatov**, and D. Korkin. "DISPOT: A simple knowledge-based protein domain interaction statistical potential". In: *Bioinformatics* (July 2019). DOI: `10.1093/bioinformatics/btz587`.

[Bog17] **D. Bogatov**. "Analysis of a Dynamic Voluntary Contribution Mechanism Public Good Game". In: *IPE Journal* 26 (2017).

[BH16] **D. Bogatov** and J. R. Hennessy. "Data MATTERS: Customizing Economic Indices to Measure State Competitiveness". In: *WPI Library* (2016).

[Nur+15] B. Nurbekov, **D. Bogatov**, J. S. Xu, and R. J. O'Brien. "Investment Trading And Risk Management: Scientifically Developing and Analyzing Trading Systems". In: *WPI Library* (2015).

🌐 Conferences / Presentations (★ presented or scheduled to present a poster, presentation or a lightning talk)

- › Web Chair for VLDB 2026
- ★ Encrypted Search Workshop at Brown
- › EUROCRYPT 2019 in Darmstadt, Germany
- ★ Northeastern Database Day 2019 at MIT
- ★ VLDB 2019 in Los Angeles, USA
- ★ CANS 2021 in Vienna, Austria (virtual)
- › Second Workshop on Encryption for Secure Search and other Algorithms
- ★ 23rd Annual Issues in Political Economy Conference
- ★ 2016 IEEE MIT Undergraduate Research Technology Conference
- ★ CS Talk at Brown University (by invitation)
- ★ ACM CCS 2021 in Seoul, Korea (virtual)

⚖️ Paper reviews

2019 IEEE ICDE	2022 SIGMOD/PODS	2022 SIGMOD/PODS
2020 SIGMOD/PODS	2022 IEEE ICDE	2023 SIGMOD/PODS
2021 SIGMOD/PODS	2022 SIGMOD Reproducibility	2023 SIGMOD Reproducibility
2021 SIGMOD Reproducibility	2022 IEEE TDSC	

💼 Professional Experience (recent / relevant)

Present — May 2022
Software Development Engineer (SDE II, Redshift team), Amazon Web Services, Boston, MA
- › Query processing, data governance
- › Security and Privacy at Redshift
- › Dynamic Data Masking (DDM) ⤴
`research` `databases` `big data` `performance` `distributed systems`

October 2021 — June 2021
Software Development Engineer Intern (Redshift team), Amazon Web Services, Palo Alto, CA (virtual)
- › Query processing optimization
- › Row Level Security (RLS) ⤴
`research` `databases` `big data` `performance` `distributed systems`

November 2020 — August 2020
Software Development Engineer Intern (Redshift team), Amazon Web Services, Palo Alto, CA (virtual)
- › Query processing optimization
- › Row Level Security (RLS) ⤴
`research` `databases` `big data` `performance` `distributed systems`

December 2019 — October 2019
Applied Scientist Intern (Crypto Algorithms team), Amazon Web Services, Seattle, WA
- › Computations over encrypted data
- › Structured Symmetric Encryption schemes
`research` `encrypted search` `databases`

September 2019 — July 2019
Cloud & Computing Infrastructure Intern (Crypto), IBM Research — Zürich, Rüschlikon, ZH, Switzerland
- › Anonymous Transactions with Revocation and Auditing in Fabric
- › Developed production-grade cryptographic Go library ⤴
`research` `blockchain` `hyperledger fabric` `delegatable credentials` `Go` `identity mixer`

Present — September 2014
All my past working experiences, All over the world, USA, Ukraine, Switzerland
- › Ph.D. Student / Research Assistant @ **Boston University** (*Boston, MA, USA*)
- › Web / DevOps developer @ **RedwoodEDA** (*Shrewsbury, MA, USA*)
- › Co-founder / web developer @ **Shevastream** (*Kyiv, Ukraine*)
- › Web developer @ **Worcester Polytechnic Institute** (*Worcester, MA, USA*)
- › Web developer / Quantitative analyst @ **TradeStation Securities** (*Plantation, FL, USA*)
- › Senior Teaching Assistant @ **Computer Science Department at WPI** (*Worcester, MA, USA*)
`teaching` `web development` `startup` `devops`

🏆 Select Awards

- ★ **pVLDB 2021 Reproducibility Award** at BU
- › **Chair's Fellowship** at BU
- › **"Outstanding Junior"** at WPI
- › **Dean's List** all semesters at WPI
- › **Charles O. Thompson Scholar** at WPI

👤 Activities

- › Director at **Mriya Inc.** ⬈ non-profit
- › Officer / IT manager at campus org at WPI
- › Career Fair Volunteer at WPI

🅰 Languages

English ●●●
Ukrainian ●●●
russian ●●●

🖥 Projects

ℰpsolute: differentially private secure range queries
Sep 2018 — Oct 2021

github.com/epsolute ⬈   publication ⬈

Developed ORAM-based differential privacy range and point query engine

`C++` `ORAM` `differential privacy` `range queries`

Anonymous transactions in blockchains
Jun 2019 — Dec 2021

github.com/IBM/dac-lib ⬈   publication ⬈

Developed production-grade Go cryptographic library

`Go` `blockchains` `research` `cryptography` `privacy`

Evaluation of secure range query protocols
May 2017 — Feb 2018

ore.dbogatov.org ⬈   publication ⬈

Analyzed, implemented and evaluated 5 ORE schemes and 5 protocols

`C#` `.NET Core` `research` `ORE` `range query protocols`

Status Site
Feb 2017 — Sep 2017

status.dbogatov.org ⬈   source code ⬈

A multi-component system for collecting and analyzing the infrastructure health

`C#` `.NET Core` `ASP MVC` `TypeScript` `Kubernetes` `micro-services`

Shevastream
Jan 2016 — May 2017

shevastream.com ⬈   source code ⬈

A small retail-oriented startup that sells custom-designed notebooks

`startup` `.NET Core` `web` `C#` `PostgreSQL`

MATTERS
Jan 2016 — Oct 2016

mhtc.org/MATTERS/ ⬈   source code ⬈

A web tool that lets users interactively do an extensive analysis over economic data collected for all states

`Spring framework` `Java` `statistics` `data analysis` `web` `PostgreSQL`

Mandelbrot
Spring 2016

try it ⬈   source code ⬈

A major class project. A web tool that interactively generates the Mandelbrot fractal and allows to "walk" and "dive" in it.

`.NET Core` `web` `C#` `TypeScript`

Lots of other different projects
All the time

see my portfolio ⬈ see me on GitHub ⬈

I'm working on different projects all the time! See all of them on my personal website dbogatov.org ⬈.

`have` `fun`

❝ Academic Referees

George Kollios ⬈
Professor, Boston University
@   gkollios@bu.edu
🎓   Scholar Profile ⬈

Leonid Reyzin ⬈
Professor, Boston University
@   reyzin@bu.edu
🎓   Scholar Profile ⬈

Manos Athanassoulis ⬈
Assistant Professor, Boston University
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🎓   Scholar Profile ⬈