Eugene Bagdasarian

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Research Interests

I study security and privacy attack vectors in deployed and emerging AI systems. My research informs the design of these systems to be trustworthy, safe, ethical, and resilient to attacks.

Experience

2024 – Present **Assistant Professor of Computer Science**, *Manning College of Information and Computer Sciences*, University of Massachusetts Amherst

2023 – Present **Senior Research Scientist**, *Google Research*, part-time

2014 – 2016 **Software Engineer**, *Cisco Systems*

Education

Cornell Tech, Cornell University, *New York, NY, USA*

2016–2023 PhD in Computer Science. Advised by Vitaly Shmatikov and Deborah Estrin

2016–2019 MSc in Computer Science

Bauman Moscow State Technical University, *Moscow, Russia*

2009–2016 Engineer's degree in Computer Science, *summa cum laude*

2009–2013 BS in Computer Science, *summa cum laude*

Awards and Honors

2024 USENIX Security Distinguished Paper Award

2023 Cornell Tech PhD Excellence Award

2021 Apple Scholars in AI/ML PhD Fellowship

2019 Digital Life Initiative Doctoral Fellowship

2017 Bloomberg Data For Good Exchange Award

2017 Computer Science Dept TA Excellence Award

2011,'12,'13 Potanin Foundation Scholarship

2011,'12 Bauman University Academic Excellence Fellowship

Funding

2025 **Schmidt Sciences AI Safety Grant**, *$500,000*

Multi-agent Safety. Main PI, Co-PI Shlomo Zilberstein

Keynotes

Oct 2025 **ACM CCS'25 AI Security Workshop**, *Keynote on Privacy and Security for Future AI Agents*

May 2025 **IEEE S&P'25 Secure Generative AI Agents Workshop**, *Invited talk on Contextual Defenses for Privacy-conscious Agents*

Mar 2025 **AAAI'25 Deployable AI Workshop**, *Keynote on Dangers in Inference-heavy AI Pipelines: Embeddings and Reasonings*

Mar 2025 **AAAI'25 Privacy-Preserving AI Workshop**, *Tutorial on Contextual Integrity for Privacy-conscious Agents*

Internships

2021 May – 2021 Aug **Research Intern**, *Apple*, Cupertino, CA, USA
Conducted research on federated learning and language models.

2020 May – 2020 Aug **Research Intern**, *Google Research*, New York, NY, USA
Researched local differential privacy and secure aggregation for federated analytics.

2018 May – 2018 Aug **Applied Scientist Intern**, *Amazon*, Seattle, WA, USA
Worked on a novel multi-service recommendations engine for Alexa.

2013 Aug – 2014 July **Software Engineering Intern**, *Cisco Systems*, Boston, MA, USA
Developed front-end and back-end for the SocialMiner data analytics web application.

Selected Publications

Lillian Tsai and **Eugene Bagdasarian**. Contextual agent security: A policy for every purpose. In *HotOS*, 2025.

Eugene Bagdasarian, Ren Yi, Sahra Ghalebikesabi, Peter Kairouz, Marco Gruteser, Sewoong Oh, Borja Balle, and Daniel Ramage. AirGapAgent: Protecting privacy-conscious conversational agents. In *CCS*, 2024.

Tingwei Zhang, Rishi Jha, **Eugene Bagdasaryan**, and Vitaly Shmatikov. Adversarial illusions in multi-modal embeddings. In *USENIX Security*, 2024. 🏆 **Distinguished Paper Award**.

Eugene Bagdasaryan and Vitaly Shmatikov. Spinning language models: Risks of propaganda-as-a-service and countermeasures. In *S&P*, 2022.

Eugene Bagdasaryan and Vitaly Shmatikov. Blind backdoors in deep learning models. In *USENIX Security*, 2021.

Eugene Bagdasaryan, Andreas Veit, Yiqing Hua, Deborah Estrin, and Vitaly Shmatikov. How to backdoor federated learning. In *AISTATS*, 2020.

Eugene Bagdasaryan, Omid Poursaeed, and Vitaly Shmatikov. Differential privacy has disparate impact on model accuracy. In *NeurIPS*, 2019.

Organizer

Dec 2023 **NeurIPS'23 Workshop**, *Backdoors in Deep Learning: The Good, the Bad, and the Ugly*
Co-organizer of workshop on backdoor attacks and defenses in deep learning

Dec 2018 **RecSys'18 Tutorial**, *Modularizing Deep Neural Network-Inspired Recommendation Algorithms*
In collaboration with Longqi Yang and Hongyi Wen

Media Coverage

Apr 2023 **The Economist**, "It doesn't take much to make machine-learning algorithms go awry"

Oct 2022 **Pluralistic: Cory Doctorow**, "Backdooring a summarizerbot to shape opinion"

Oct 2022 **Schneier on Security**, "Adversarial ML Attack that Secretly Gives a Language Model a Point of View"

Dec 2021 **VentureBeat**, "Propaganda-as-a-service may be on the horizon if large language models are abused"

Aug 2021 **ZDNet**, "Cornell University researchers discover 'code-poisoning' attack"

Jun 2020 **Cornell Chronicle**, "Platform empowers users to control their personal data"

Advising

PhD Students

2024–Present Abhinav Kumar

2025-Present Dzung Pham (co-advised w Amir Houmansadr)

2025-Present June Jeong (co-advised w Amir Houmansadr)

Teaching Experience

Fall 2025 COMPSCI 690F: Trustworthy and Responsible AI

Fall'25, Spring'25, Fall'25 COMPSCI 692: AI Security Seminar

Spring 2025 COMPSCI 360: Introduction to Security

Spring 2017 CS 5450: Networked and Distributed Systems, TA, **Excellence Award**

Professional Activity

Conference Reviewing

S&P'26, ICLR'25, CCS'25, CCS'24, ICLR'24, ICLR'22, ICML'22, NeurIPS'21

Journal Reviewing

TMLR'22, IEEE T-IFS'22

Workshop Reviewing

FL4NLP@ACL'22, AdvML@ICML'22, MAISP@MobiSys'21

Department Service

2024–Present Co-Lead of AI Safety Initiative at UMass

2024–Present Organizer of the CICS Security and Privacy Seminar Series

2018–2019 Co-lead of the PhD Student at Cornell Tech (PACT) organization

Broadening Participation

2024–Present Co-Organizer of Pioneer Leaders in AI and Robotics Initiative

Invited Talks

Sep 2025 **Northeastern University**, *Security Seminar*
Building Trustworthy Future AI Agents

Mar 2025 **Brave**, *Research Seminar*
Designing privacy-conscious Agents

Oct 2024 **ServiceNow**, *Research Seminar*
Designing privacy-conscious Agents

Apr 2023 **Michigan CS**, *Research Seminar*
Untrustworthy Machine Learning: How to Balance Security, Accuracy, and Privacy?

Apr 2023 **Columbia CS**, *Research Seminar*
Untrustworthy Machine Learning: How to Balance Security, Accuracy, and Privacy?

Apr 2023 **BU CDS**, *Research Seminar*
Untrustworthy Machine Learning: How to Balance Security, Accuracy, and Privacy?

Mar 2023 **UW Allen School CSE**, *Research Seminar*
Untrustworthy Machine Learning: How to Balance Security, Accuracy, and Privacy?

Mar 2023 **McGill**, *Research Seminar*
Untrustworthy Machine Learning: How to Balance Security, Accuracy, and Privacy?

Feb 2023 **CISPA**, *Research Seminar*
Untrustworthy Machine Learning: How to Balance Security, Accuracy, and Privacy?

Feb 2023 **UMass CS**, *Research Seminar*
Untrustworthy Machine Learning: How to Balance Security, Accuracy, and Privacy?

Jan 2023 **UCLA CS**, *Research Seminar*
Untrustworthy Machine Learning: How to Balance Security, Accuracy, and Privacy?

Sep 2022 **Brave Software**, *Research Seminar*
Sparse federated analytics: location heatmaps and language tokenizations.

Jul 2022 **Google Research**, *Google Federated Talks*
Sparse federated analytics: location heatmaps and language tokenizations.

Mar 2022 **University of Chicago**, *The SAND Lab Talks*
Spinning Language Models: Propaganda-As-A-Service and Countermeasures.

Jan 2022 **University of Cagliari**, *Machine Learning Security Seminar Series*
Spinning Language Models: Propaganda-As-A-Service and Countermeasures.

Jan 2022 **Samsung AI Center Cambridge**, *Invited Talk Series*
Evaluating privacy preserving techniques in machine learning.

Dec 2021 **University College London**, *Privacy and Security in ML Interest Group*
Blind Backdoors in Deep Learning Models.

Nov 2021 **University of Cambridge**, *Computer Laboratory Security Seminar*
Blind Backdoors in Deep Learning Models.

Sep 2021 **Telefonica Research**, *Research Seminar*
Evaluating privacy preserving techniques in machine learning.

Jan 2021 **Microsoft**, *Applied Research Invited Talk Series*
Evaluating privacy preserving techniques in machine learning.

Jun 2020 **Google Research**, *Google Federated Talks*
Salvaging federated learning with local adaptation.

Feb 2020 **Cornell Tech**, *Digital Live Initiative*
Evaluating privacy preserving techniques in machine learning.

All Publications

Conference Publications

Ren Yi, Octavian Suciu, Adria Gascon, Sarah Meiklejohn, **Eugene Bagdasarian**, and Marco Gruteser. Privacy reasoning in ambiguous contexts. In *NeurIPS*, 2025.

Tingwei Zhang, Collin Zhang, John X. Morris, **Eugene Bagdasarian**, and Vitaly Shmatikov. Self-interpreting adversarial images. In *USENIX Security*, 2025.

Ali Naseh, Jaechul Roh, **Eugene Bagdasarian**, and Amir Houmansadr. Backdooring bias into text-to-image models. In *USENIX Security*, 2025.

Eugene Bagdasarian and Vitaly Shmatikov. Mithridates: Auditing and boosting backdoor resistance of machine learning pipelines. In *CCS*, 2024.

Eugene Bagdasarian, Ren Yi, Sahra Ghalebikesabi, Peter Kairouz, Marco Gruteser, Sewoong Oh, Borja Balle, and Daniel Ramage. AirGapAgent: Protecting privacy-conscious conversational agents. In *CCS*, 2024.

Tingwei Zhang, Rishi Jha, **Eugene Bagdasaryan**, and Vitaly Shmatikov.

Adversarial illusions in multi-modal embeddings. In *USENIX Security*, 2024. 🏆 **Distinguished Paper Award**.

Eugene Bagdasaryan and Vitaly Shmatikov. Spinning language models: Risks of propaganda-as-a-service and countermeasures. In *S&P*, 2022.

Eugene Bagdasaryan and Vitaly Shmatikov. Blind backdoors in deep learning models. In *USENIX Security*, 2021.

Eugene Bagdasaryan, Andreas Veit, Yiqing Hua, Deborah Estrin, and Vitaly Shmatikov. How to backdoor federated learning. In *AISTATS*, 2020.

Eugene Bagdasaryan, Omid Poursaeed, and Vitaly Shmatikov. Differential privacy has disparate impact on model accuracy. In *NeurIPS*, 2019.

Zhiming Shen, Zhen Sun, Gur-Eyal Sela, **Eugene Bagdasaryan**, Christina Delimitrou, Robbert Van Renesse, and Hakim Weatherspoon. X-containers: Breaking down barriers to improve performance and isolation of cloud-native containers. In *ASPLOS*, 2019.

Longqi Yang, **Eugene Bagdasaryan**, Joshua Gruenstein, Cheng-Kang Hsieh, and Deborah Estrin. Openrec: A modular framework for extensible and adaptable recommendation algorithms. In *WSDM*, 2018.

Longqi Yang, **Eugene Bagdasaryan**, and Hongyi Wen. Modularizing deep neural network-inspired recommendation algorithms. In *RecSys*, 2018.

Journal Publications

Sahra Ghalebikesabi, **Eugene Bagdasarian**, Ren Yi, Itay Yona, Ilia Shumailov, Aneesh Pappu, Chongyang Shi, Laura Weidinger, Robert Stanforth, Leonard Berrada, Pushmeet Kohli, Po-Sen Huang, and Borja Balle. Privacy awareness for information-sharing assistants: A case-study on form-filling with contextual integrity. *TMLR*, 2025.

Eugene Bagdasaryan, Peter Kairouz, Stefan Mellem, Adrià Gascón, Kallista Bonawitz, Deborah Estrin, and Marco Gruteser. Towards sparse federated analytics: Location heatmaps under distributed differential privacy with secure aggregation. In *PETS*, 2022.

Workshop Papers

Lillian Tsai and **Eugene Bagdasarian**. Contextual agent security: A policy for every purpose. In *HotOS*, 2025.

Eugene Bagdasaryan, Congzheng Song, Rogier van Dalen, Matt Seigel, and Áine Cahill. Training a tokenizer for free with private federated learning. In *FL4NLP at ACL*, 2022.

Eugene Bagdasaryan, Griffin Berlstein, Jason Waterman, Eleanor Birrell, Nate Foster, Fred B Schneider, and Deborah Estrin. Ancile: Enhancing privacy for ubiquitous computing with use-based privacy. In *WPES at CCS*, 2019.

Preprints

Mason Nakamura, Abhinav Kumar, Saaduddin Mahmud, Sahar Abdelnabi, Shlomo Zilberstein, and **Eugene Bagdasarian**. Terrarium: Revisiting the blackboard for multi-agent safety, privacy, and security studies. *arXiv preprint arXiv:2510.14312*, 2025.

Abhinav Kumar, Jaechul Roh, Ali Naseh, Amir Houmansadr, and **Eugene Bagdasarian**. Throttling web agents using reasoning gates. *arXiv preprint arXiv:2509.01619*, 2025.

Hyejun Jeong, Mohammadreza Teymoorianfard, Abhinav Kumar, Amir Houmansadr, and **Eugene Bagdasarian**. Network-level prompt and trait leakage in local research agents. *arXiv preprint arXiv:2508.20282*, 2025.

Dzung Pham, Peter Kairouz, Niloofar Mireshghallah, **Eugene Bagdasarian**, Chau Minh Pham, and Amir Houmansadr. Can large language models really recognize your name? *arXiv preprint arXiv:2505.14549*, 2025.

Sahar Abdelnabi, Amr Gomaa, **Eugene Bagdasarian**, Per Ola Kristensson, and Reza Shokri. Firewalls to secure dynamic LLM agentic networks. *arXiv preprint arXiv:2502.01822*, 2025.

Kleomenis Katevas, **Eugene Bagdasaryan**, Jason Waterman, Mohamad Mounir Safadieh, Eleanor Birrell, Hamed Haddadi, and Deborah Estrin. Policy-based federated learning. *Preprint*, 2020.

Tao Yu, **Eugene Bagdasaryan**, and Vitaly Shmatikov. Salvaging federated learning by local adaptation. *Preprint*, 2020.

Jonathan Behrens, Ken Birman, Sagar Jha, Matthew Milano, Edward Tremel, **Eugene Bagdasaryan**, Theo Gkountouvas, Weijia Song, and Robbert Van Renesse. Derecho: Group communication at the speed of light. Technical report, Cornell University, 2016.