



刘寅

Ph.D.

北京工业大学软件工程系讲师、硕士研究生导师 (含本地/国际学生)
博士毕业于弗吉尼亚理工大学 (Virginia Tech) 计算机系
研究方向以软件工程为主体, 涵盖可信/移动计算, 软件安全与隐私
攻读博士之前, 在Sony移动公司作为软件工程师工作逾3年

联系方式

 yinliu[AT]bjut.edu.cn

 ignorer001.github.io

答辩委员会成员:

Dr. Eli Tilevich. *Professor, Virginia Tech*

Dr. Shigeru Chiba. *Professor, The University of Tokyo*

Dr. Na Meng. *Associate Professor, Virginia Tech*

Dr. Francisco Servant. *Assistant Professor, Universidad de Málaga*

Dr. Muhammad Ali Gulzar. *Assistant Professor, Virginia Tech*

教育背景

2016–2021 弗吉尼亚理工大学 (Virginia Tech), 美国
博士, 计算机科学与应用; 导师: Dr. Eli Tilevich

2008–2011 北京林业大学 (BJFU)
硕士, 计算机软件与理论

2004–2008 北京林业大学 (BJFU)
本科, 计算机科学与技术

研究方向/兴趣

软件工程: 软件测试, 程序分析/理解, 代码重构

可信&移动计算: 基于TEE的可信软件, Android系统/软件

安全&隐私: 软件缺陷/漏洞分析, 程序关键信息的安全/隐私保护

□ 具体研究课题/成果

- 面向安卓平台可信执行环境的性能缺陷测试技术研究
- 基于可信计算的关键程序保护: 通过研发编译器模块及程序语言, 实现自动化隔离关键程序代码和数据 (成果发表在 ManLang'17, GPCE'18, COLA'20, TrustCom'20, JSS'22)
- 移动计算中的安全与隐私: 通过设计安全中间件, 实现组件间通信的安全与隐私保护机制 (成果发表在 SecureComm'21, MobiCASE'21, JSS'22)
- 程序理解: 通过设计和开发程序分析和语言层面的支持, 实现程序变量的语义推测 (成果发表在 GPCE'20)
- 代码搜索引擎: 通过对程序员的调研和对现有代码搜索引擎的分析, 多角度定义代码搜索引擎的概念、明确其特点、总结其不足 (成果发表在 APSEC'22)

工作经历

2021至今 讲师, 北京工业大学

2016-2021 研究助理, 弗吉尼亚理工大学

2011-2014 软件工程师, 核心软件 / 平台研发部, Sony移动通信公司

- 开发/维护Android平台多媒体传输协议(MTP) 和 Android系统级应用
- 与Aricent公司印度研发部合作开发、维护MTP协议
- 与美国Verizon公司合作Android手机网络设置软件开发
- 与东京/隆德开发部合作进行新功能开发和代码审核

科研服务

- 会议发行主席: ManLang'18

认证

移动开发工程师, 工信部, 中国

其它

热爱中国古典诗词, 并有一定的水准

我的一首词:

[西江月] 长畏荆棘满路, 安能笑傲江湖。
一书一剑展雄图, 燕然一鞭直度。
虽千万人吾往, 董道不负心初。
浩气不与世沉浮, 枕戈静待箫鼓。

除中文(母语), 英文(专业级)之外,
我还会说法语和日语(初级)

论文发表情况

- [CC'23] [Yin Liu](#), Breno Dantas Cruz, and Eli Tilevich, "Trusted and Privacy-Preserving Sensor Data Unloading," Computer Communications, Accepted, 2023 [SCI-期刊, SCI-1区, CCF-C].
- [APSEC'22] [Yin Liu](#), Shuangyi li, and Eli Tilevich, "Toward a Better Alignment Between the Research and Practice of Code Search Engines," Proceedings of the 29th Asia-Pacific Software Engineering Conference, December, 2022 [EI-会议, CCF-C].
- [JSS'22] [Yin Liu](#), Breno Dantas Cruz, and Eli Tilevich, "Secure and Flexible Message-Based Communication for Mobile Apps Within and Across Devices," Journal of Systems & Software, In Print, July 2022 [SCI-期刊, SCI-2区, CCF-B].
- [JSS'22] [Yin Liu](#), Siddharth Dhar, and Eli Tilevich, "Only Pay for What You Need: Detecting and Removing Unnecessary TEE-Based Code," Journal of Systems & Software, In Print, February 2022 [SCI-期刊, SCI-2区, CCF-B].
- [MobiCASE'21] [Yin Liu](#), Breno Dantas Cruz, and Eli Tilevich, "Privacy-Preserving Sharing of Mobile Sensor Data," Proceedings of EAI MobiCASE 2021 - 12th EAI International Conference on Mobile Computing, Applications and Services 2021, November 2021 [EI-会议].
- [SecureComm'21] [Yin Liu](#), Breno Dantas Cruz, and Eli Tilevich, "HTPD: Secure and Flexible Message-Based Communication for Mobile Apps," Proceedings of the 17th EAI International Conference on Security and Privacy in Communication Networks, September 2021 [EI-会议, CCF-C].
- [TrustCom'20] [Yin Liu](#), and Eli Tilevich, "Reducing the Price of Protection: Identifying and Migrating Non-Sensitive Code in TEE," Proceedings of the The 19th IEEE International Conference on Trust, Security and Privacy in Computing and Communications, December 2020 [EI-会议, CCF-C].
- [GPCE'20] [Yin Liu](#), and Eli Tilevich, "VarSem: Declarative Expression and Automated Inference of Variable Usage Semantics," Proceedings of the 19th International Conference on Generative Programming: Concepts & Experience (GPCE 2020), November 2020 [EI-会议, CORE-B].
- [COLA'20] [Yin Liu](#), Kijin An, and Eli Tilevich, "Automated Refactoring for Different Trusted Execution Environments under Real-Time Constraints," Journal of Computer Languages (COLA) [SCI-期刊, SCI-3区] 年度最佳论文提名奖.
- [GPCE'18] [Yin Liu](#), Kijin An, and Eli Tilevich, "RT-Trust: Automated Refactoring for Trusted Execution Under Real-Time Constraints," Proceedings of the 17th International Conference on Generative Programming: Concepts & Experience (GPCE 2018), November 2018 [EI-会议, CORE-B].
- [ManLang'17] [Yin Liu](#), Zheng Song, and Eli Tilevich, "Querying Invisible Objects: Supporting Data-Driven, Privacy-Preserving Distributed Applications," Proceedings of the 14th International Conference on Managed Languages & Runtimes (ManLang 2017, formerly PPPJ), September 2017 [EI-会议, CORE-C].

科研项目经验

- [主持] 北京市自然科学基金, 面向安卓平台可信执行环境的性能缺陷测试技术研究, 2023-2025
- [核心参与者] 美国国家自然科学基金 (NSF), 项目名称-Perpetuum Mobile: Orchestrating the Provisioning of Pervasive Resources for Emerging Mobile Applications, 2017-2021
- [核心参与者] 美国国家自然科学基金 (NSF), 项目名称-Security and Software Engineering Research Center (S2ERC) at Virginia Tech, 2017-2020
- [核心参与者] 思科公司 (Cisco, Inc.), 课题方向-移动/边缘计算中的隐私保护, 2018
- [核心参与者] 安全与软件工程研究中心 (S2ERC), 课题方向-代码重构, 2017

指导经验

- 2021至今 指导2人(本科)的毕业设计及论文, 北京工业大学(其中1人获评北京工业大学优秀毕业设计)
- 2020至今 指导2人(硕士)的科研项目及毕业论文, 弗吉尼亚理工大学
- 2016-2020 指导3人(本科)的科研项目, 弗吉尼亚理工大学

获奖情况

- BitShares 奖学金, 弗吉尼亚理工大学, 2019
- 知识产权发明奖(两次), Sony, 2014
- 最佳同事奖, Sony, 2012
- 学业一等奖学金, 北京林业大学, 2010
- 学业二等奖学金, 北京林业大学, 2007
- 学业三等奖学金, 北京林业大学, 2005, 2006
- 征文比赛奖, 中国青年报·中青在线, 2006

Yin Liu

yinliu[AT]bjut.edu.cn

<https://ignorer001.github.io/>

EDUCATION

- Ph.D. Computer Science** 2016-2021
Virginia Tech, USA
Advisor: Dr. Eli Tilevich
Dissertation: Methodologies, Techniques, and Tools for Understanding and Managing Sensitive Program Information
- M.S. Computer Software and Theory** 2008-2011
Beijing Forestry University, China
- B.S. Computer Science and Technology** 2004-2008
Beijing Forestry University, China

RESEARCH INTERESTS

My primary research focus is on *Software Engineering*, with additional interests in *Trusted&Mobile Computing* and *Software Security & Privacy*. I use innovative ideas and techniques in programming languages, program analysis, trusted execution environment, and machine learning to solve software engineering and security/privacy problems.

- **Software Engineering:** software testing; program comprehension; code refactoring (compiler-based solution)
- **Trusted & Mobile Computing:** trusted execution environment-based software; Android system/framework/app
- **Security & Privacy:** vulnerability detection; privacy-preserving techniques; critical program information protection

✧ Detailed Topics

- *Understanding and Testing Performance Issues for Trusted Execution Environment in Android Platform*
- *TEE-based Critical Code Protection:* Developing powerful programming tools to automatically isolate critical code (published on ManLang'17, GPCE'18, COLA'20, TrustCom'20, JSS'22)
- *Security/Privacy in Mobile Computing:* Ensuring security for inter-component communications and privacy for data sharing (published on SecureComm'21, MobiCASE'21, JSS'22)
- *Program Comprehension:* Designing program analysis and programming support for inferring the usage semantics of program constructs (published on GPCE'20)
- *Code Search Engine:* drawing a comprehensive picture of code search engines, as reflected in developers' experiences and perspectives as well as the state of the art (published on APSEC'22)

PROFESSIONAL EXPERIENCES

- Lecturer** (tenure-track), **Master's Advisor** (for both local and international students) 2021-present
Beijing University of Technology
- Software Engineer (full-time), Sony Mobile Communications** 2011-2014
Core Software / Platform Department, Sony Mobile Communications
- Developed & Maintained Android's Media Transfer Protocol and system-level applications.
 - Mentored new colleagues
 - Cooperated with Lund/Tokyo sites on feature development and code review
 - Delivered contributions to Google and Qualcomm, drafted technique articles

TEACHING EXPERIENCES

- Programming in Python, Instructor** Spring 2024
Beijing University of Technology
- 32 class hours, ~50 students
- Freshman Seminar - Privacy Computing and Software Engineering, Instructor** Fall 2022/2023
Beijing University of Technology
- 2 class hours, ~30 students
- CS 1054: Introduction to Programming in Java, Teaching Assistant** Fall 2016
Virginia Tech
- Taught and administered two lab sections (~50 students), held three hours of office hours per week

RESEARCH MENTORING

Mentored two undergraduate at Beijing University of Technology	2021-present
• one student received the Excellent Graduation Project award from Beijing University of Technology	
Mentored two graduate students (MSc) at Virginia Tech	2020-present
Mentored three undergraduate students at Virginia Tech	2016-2021
Mentored an undergraduate at Beijing Forestry University	2010-2011

PUBLICATIONS

[CC'23] Yin Liu, Breno Dantas Cruz, and Eli Tilevich, "Trusted and Privacy-Preserving Sensor Data Onloading," Computer Communications, Accepted, 2023 [SCI-Journal, SCI-Q1, CCF-C].

[APSEC'22] Yin Liu, Shuangyi li, and Eli Tilevich, "Toward a Better Alignment Between the Research and Practice of Code Search Engines," Proceedings of the 29th Asia-Pacific Software Engineering Conference, December, 2022 [EI-Conference, CCF-C].

[JSS'22] Yin Liu, Breno Dantas Cruz, and Eli Tilevich, "Secure and Flexible Message-Based Communication for Mobile Apps Within and Across Devices," Journal of Systems & Software, In Print, July 2022 [SCI-Journal, SCI-Q2, CCF-B].

[JSS'22] Yin Liu, Siddharth Dhar, and Eli Tilevich, "Only Pay for What You Need: Detecting and Removing Unnecessary TEE-Based Code," Journal of Systems & Software, In Print, February 2022 [SCI-Journal, SCI-Q2, CCF-B].

[MobiCASE'21] Yin Liu, Breno Dantas Cruz, and Eli Tilevich, "Privacy-Preserving Sharing of Mobile Sensor Data," Proceedings of EAI MobiCASE 2021 - 12th EAI International Conference on Mobile Computing, Applications and Services 2021, November 2021 [EI-Conference].

[SecureComm'21] Yin Liu, Breno Dantas Cruz, and Eli Tilevich, "HTPD: Secure and Flexible Message-Based Communication for Mobile Apps," Proceedings of the 17th EAI International Conference on Security and Privacy in Communication Networks, September 2021 [EI-Conference, CCF-C].

[TrustCom'20] Yin Liu, and Eli Tilevich, "Reducing the Price of Protection: Identifying and Migrating Non-Sensitive Code in TEE", Proceedings of the 19th IEEE International Conference on Trust, Security and Privacy in Computing and Communications (TrustCom), December 2020 [EI-Conference, CCF-C].

[GPCE'20] Yin Liu, and Eli Tilevich, "VarSem: Declarative Expression and Automated Inference of Variable Usage Semantics", Proceedings of the 19th International Conference on Generative Programming: Concepts & Experience (GPCE), November 2020 [EI-Conference, CORE-B].

[COLA'20] Yin Liu, Kijin An, and Eli Tilevich, "Automated Refactoring for Different Trusted Execution Environments under Real-Time Constraints", Journal of Computer Languages (COLA), February 2020 [SCI-Journal, SCI-Q3] **Best Paper Runner-up**.

[GPCE'18] Yin Liu, Kijin An, and Eli Tilevich, "RT-Trust: Automated Refactoring for Trusted Execution Under Real-Time Constraints", Proceedings of the 17th International Conference on Generative Programming: Concepts & Experience (GPCE), November 2018 [EI-Conference, CORE-B].

[ManLang'17] Yin Liu, Zheng Song, and Eli Tilevich, "Querying Invisible Objects: Supporting Data-Driven, Privacy-Preserving Distributed Applications", Proceedings of the 14th International Conference on Managed Languages & Runtimes (ManLang, formerly PPPJ, now called MPLR), September 2017 [EI-Conference, CORE-C].

POSTERS

Yin Liu, and Eli Tilevich, A Programming Framework for Data-Intensive, Privacy-Preserving Applications, 16th Semiannual Security & Software Engineering Research Center (S2ERC) showcase, November 8-9, 2017.

Yin Liu, and Eli Tilevich, Compiler Tools for Critical Program Information Protection, 15th Semiannual Security & Software Engineering Research Center (S2ERC) showcase, May 24-25, 2017.

FUNDING

2023-2025, Beijing Natural Science Foundation - General Program, ¥ 200,000

RESEARCH SERVICES

Proceedings Chair, the 15th International Conference on Managed Languages & Runtimes (ManLang'18), 2018

INVITED TALKS

Research Method of Computer Science (focus on Software Engineering) 2020
School of Information Science and Technology, Beijing Forestry University

CERTIFICATION

Mobile Development Engineer, *Ministry of Industry and Information Technology of PRC*

HONORS & AWARDS

BitShares Graduate Fellowship, <i>Virginia Tech</i>	2019
Intellectual Property Rights Inventor Award (Twice), <i>Sony Mobile Communication</i>	2014
The Best Colleague and Most Friendly Developer, <i>Sony Mobile Communication</i>	2012
College Academic Scholarship, First-Class, <i>Beijing Forestry University</i>	2010
College Academic Scholarship, Second-Class, <i>Beijing Forestry University</i>	2007
College Academic Scholarship, Third-Class, <i>Beijing Forestry University</i>	2005, 2006
Essay Competition Prize, <i>China Youth Online</i>	2006

COPYRIGHTS

<u>Yin Liu</u> , Lock or wake up the phone by shaking, Computer Software Copyright, <i>National Copyright Administration of PRC</i>
<u>Yin Liu</u> , Desktop management system based on Policy, Computer Software Copyright, <i>National Copyright Administration of PRC</i>
<u>Yin Liu</u> , Map building system in unknown environment, Computer Software Copyright, <i>National Copyright Administration of PRC</i>

OTHER EDUCATION

English Presentation Trainee <i>Virginia Tech, USA</i>	2016
Academic Writing Trainee <i>Virginia Tech, USA</i>	2016
English Writing Trainee <i>University of California, USA</i>	2014-2015
Language Trainee (English as a Second Language) <i>Davis Adult and Community Education, USA</i>	2014-2015

MEMBERSHIPS

Member, Association for Computing Machinery (ACM)
Member, China Computer Federation (CCF)

MISC.

- **I am also proficient in Classical Chinese Poetry**
One of my Poems:
[西江月] 长畏荆棘满路，安能笑傲江湖。一书一剑展雄图，燕然一鞭直度。虽千万人吾往，董道不负心初。
浩气不与世沉浮，枕戈静待箫鼓。
- **Besides Chinese (native) and English (professional level), I can speak French and Japanese (beginner's level)**

REFERENCES

Dr. Eli Tilevich. *Professor, Virginia Tech*
Dr. Shigeru Chiba. *Professor, The University of Tokyo*
Dr. Na Meng. *Associate Professor, Virginia Tech*
Dr. Francisco Servant. *Assistant Professor, Universidad de Málaga*
Dr. Muhammad Ali Gulzar. *Assistant Professor, Virginia Tech*
Dr. Zheng Song. *Assistant Professor, University of Michigan--Dearborn*
Dr. Peeratham Techapalokul. *Lecturer (tenure-track), Rajamangala University of Technology Lanna*