Jian Cui

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EDUCATION

Korea Advanced Institute of Science and Technology *Mar. 2020 - Feb. 2022*
M.S. in Electrical Engineering (*full scholarship*)
- Advisor: *Prof.Seungwon Shin*
- GPA: 4.1/4.3

Korea Advanced Institute of Science and Technology *Aug. 2015 - Feb. 2020*
B.S. in Electrical Engineering (*full scholarship*)
- GPA: 3.46/4.3

The Cornell, Maryland, Max Plank Pre-doctoral Research School *Aug. 2022*
Research School, Max Planck Institute for Software Systems

Polytechnic University of Milan (politecnico di milano) *Sept. 2018 - Jan. 2019*
Exchange Student, Computer Science Department (*scholarship: $2,000*)

Peter the Great St.Petersburg Polytechnic University *July 2017 - Aug. 2017*
Summer School, Electrical Engineering (*scholarship: $2,000*)

RESEARCH INTEREST

Data-driven Security, Data Mining, Social Network, AI Security

PUBLICATION

1. **Meta-Path-based Fake News Detection Leveraging Multi-level Social Context Information**
   ***Jian Cui**, Kwanwoo Kim, Seung Ho Na, and Seungwon Shin*
   31st ACM International Conference on Information and Knowledge Management **(CIKM 2022)**
2. **MECaNIC: SmartNIC to Assist URLLC Processing in Multi-Access Edge Computing Platforms**
   *Taejune Park, Myoungsung You, **Jian Cui**, Youngjin Jin, and Seungwon Shin*
   The 30th IEEE International Conference on Network Protocols **(ICNP 2022)**
3. **Discovering Message Templates on Large-scale Bitcoin Abuse Reports using a Two-fold NLP-based Clustering Method**
   *Jinho Choi, Taehwa Lee, Kwanwoo Kim, Minjae Seo, **Jian Cui**, and Seungwon Shin*
   Institute of Electronics, Information and Communication Engineers **(IEICE letter)**
4. **DarkBERT: A Language Model for the Dark Side of the Internet**
   *Youngjin Jin, Eugene Jang, **Jian Cui**, Jinwoo Chung, Yongjae Lee, Seungwon Shin*
   (under review)
5. **DRAINCLoG: Detecting Rogue Accounts with Illegally-obtained NFTs using Classifiers Learned on Graphs**
   *Hanna Kim, **Jian Cui**, Eugene Jang, Chanhee Lee, Yongjae Lee, Jinwoo Chung, Seungwon Shin*
   (under review)

6. **Familiar Taste of Toxicity: Measuring Causal Influence of Toxic Comments on Internet Forums**
   *Kwanwoo Kim, **Jian Cui**, Minkyoo Song, and Seungwon Shin*
   (under review)

7. **SecuBERT: Towards Robust Fully-Automated Threat Intelligence via Language Models for the Cybersecurity Domain**
   *Eugene Jang, **Jian Cui**, Youngjin Jin, Dayeon Lim, Jinwoo Chung, Yongjae Lee, Seungwon Shin*
   (working on)

8. **Social Influence Association Estimation on Internet Forums with User-aware Attention Mechanism**
   *Kwanwoo Kim, **Jian Cui**, Seung Ho Na, and Seungwon Shin*
   (working on)

PROFESSIONAL EXPERIENCE

Research Intern — S2W Inc., South Korea
AI Team — *Feb. 2022 - Present*

- **Language model pre-training**: Pre-train the Dark web language model and the security language model and apply them to many practical use cases, such as noteworthy forum thread detection, security-related Named Entity Recognition (NER), etc.
- **NFT scam detection**: Propose a scam detection framework based on Graph Neural Network (GNN). The model is designed to effectively capture complex NFT transaction contexts and social contexts (user transaction relationships).
- **Security event detection in Twitter**: Propose a contrastive learning framework to learn the representation of each tweet and apply the DBSCAN to cluster the tweets to identify the security-related events.

Research Assistant — KAIST, South Korea
Research on vulnerabilities of pre-trained language model — *Apr. 2021 - Dec. 2021*
***Supporter**: Financial Security Institute, South Korea*

- Investigated attacks and countermeasures of pre-trained language model (mainly focused on BERT and GPT-2) and categorized the vulnerabilities based on the investigation.
- Proposed a vulnerability verification method for the AI financial service developments and verified the feasibility of verification method by applying it to the the pre-trained language model used in actual financial services.

Research Assistant — KAIST, South Korea
Research on security threats and countermeasures of AI — *May. 2020 - Dec. 2020*
***Supporter**: Financial Security Institute, South Korea*

- Investigated AI models' existing threats and countermeasures and classified them according to the security triad (i.e., confidentiality, integrity, and availability) and AI development life-cycle.
- Created an AI security checklist for AI developers based on the investigation, and the checklist is distributed to the developers in charge of developing AI models for financial services.

Undergraduate Individual Research Intern — KAIST, South Korea
Network and System Security Lab — *June. 2019 - Dec. 2019*

- Studied Software-defined Network (SDN) and implemented hardware based networking scheduler in the NetFPGA using Verilog.

AWARDS

The 27th Samsung Humantech Paper Award: Silver Prize *Feb. 2021*
Title: *MECaNIC: SmartNIC to Assist URLLC Processing in Multi-Access Edge Computing Platforms*

- The paper proposes a novel architecture for Multi-access Edge Computing (MEC), which extends a hardware data plane of MEC hosts to provide precise packet scheduling and process offloading.

The 2020 Korea Cyber Security Paper Award: Excellence Award *Sept. 2020*
Title: *CENSor: Detecting Illicit Bitcoin Operation via GCN-based Hyperedge Classification*

- The objective of this paper is to detect illicit Bitcoin transactions and addresses in the Bitcoin network. Hypergraph and graph neural network-based approaches are employed to enable robust and powerful detection.

TEACHING

Teaching Assistant
KAIST TS251 Data Science Overview *Spring 2020, Spring 2021*

TECHNICAL SKILLS

Python (PyTorch, Tensorflow), C, C++, Verilog, MATLAB, Java (Basic)

HTML, CCS, Bash Script, LaTeX

MySQL, Spark

LANGUAGE SKILLS

Chinese (Mandarin), Korean: Native

English: Professional

- **GRE**: 152 (V), 166 (Q), 4.0 (AW)

- **TOEFL** (My Best Score): 108 - 29 (R), 27 (L), 27 (S), 25 (W)

COURSES

Graduate School of AI

AI607 Graph Mining and Social Network	*A+*
AI602 Advanced Deep Learning	*A*
AI506 Data Mining and Search	*A*
AI505 Optimization for AI (S/U)	*S*
AI504 Programming for AI (S/U)	*S*

School of EE - Computer Division

EE623 Information Theory	*A−*
EE528 Engineering Random Process	*A+*
EE513 Network Systems and Security	*A+*
EE488 Special Topics: Database and Bigdata system	*A*
EE488 Special Topics: Advanced Programming Techniques for Electrical Engineering	*A*
EE412 Foundation of Big Data Analytics	*A−*
EE415 Operating Systems and System Programming for Electrical Engineering	*A*
EE323 Computer Network	*A*
EE312 Introduction to Computer Architecture	*A*
EE303 Digital System Design	*A−*

MISC.

Club Activity:

- President of KAIST International Football Club (KIFC) *Aug. 2015 - Aug. 2017*
- Team member of Futsal Club at EE, KAIST *Sept. 2016 - Aug. 2017*

Volunteer:

- Student assistant at Student Life Team, KAIST *Aug. 2016 - Aug. 2018*
- Korean tutor at KAIST Language Center *July. 2018*
- Representative interpreter of KAIST at Smart China Expo, Chongqing, China *Aug. 2018*