CUI JINGYANG

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PROFESSIONAL SUMMARY

I am deeply passionate about researching and implementing algorithms along with their underlying mathematical principles. With a strong knack for idea generation, I bring to the table innovative solutions backed by data-driven insights. My expertise encompasses a wide range of machine learning algorithm principles, and I possess a profound interest in their various derivations.

While my academic journey during the postgraduate phase might not reflect traditional accolades, my five years of dedicated algorithm research within a corporate setting speaks to my commitment and drive for deeper understanding. My contributions have included producing innovative documents and patent materials that have consistently been appreciated by esteemed clients, including mobile operators, public safety authorities, and government agencies.

My rich work experience has improved my communication skills, making me adept at liaising with clients from diverse sectors. The efficiency with which I deliver results, coupled with my genuine and sincere interactions, sets me apart. I eagerly anticipate the possibility of collaborating with Professor Dai on impactful projects.

EDUCATION

HEBEI GEO(GEOLOGY) UNIVERSITY, INFORMATION ENGINEERING SCHOOL Shijiazhuang, Hebei, China
Master of Computer Application Technology September 2016 – January 2019
GPA: 3.4/4

- 2016: First-class Academic Scholarship of Hebei GEO University, ranked first in professional comprehensive score.
- 2017: Third prize in the Inaugural Graduate Network and Information Security Technology Competition of Hebei.
- 2017: Second-class Academic Scholarship, ranked second in professional comprehensive score.
- 2018: Second-class Academic Scholarship, ranked second in professional comprehensive score.

HEBEI GEO(GEOLOGY) UNIVERSITY, INFORMATION ENGINEERING SCHOOL Shijiazhuang, Hebei, China
Bachelor of Network Engineering September 2012 – June 2016

WORK EXPERIENCE

TOPSEC TECHNOLOGY GROUP Beijing, China
Senior Data Analysis Engineer August 2018 – Present

Achievements & Recognitions:

- Since joining in 2018: Consistently awarded the highest performance assessment of "A".
- 2022: Recognized as "Excellent Inventor" within Topsec Technology Group.
- 2023: Received the "2023 National Offensive and Defensive Action" - "Excellent Technical Warfare Method Commendation" within Topsec Technology Group.

Key Projects & Contributions:

2019:

- **Alarm Volume Management:** Addressed challenges with excessive periodic internal alarm volume through the development of an anomaly detection algorithm utilizing K-fold cross-validation. By implementing the 3σ rule for threshold identification, the team efficiently reduced false alarms.
- **Employee Behavior Analysis:** Introduced a rigorous employee anomaly behavior detection system using the DBSCAN density clustering algorithm combined with TF-IDF techniques, enhancing internal threat detection mechanisms.

2020:

- **Security Threat Detection:** Launched an advanced security threat detection system built on a knowledge graph. Utilization of the Common Vulnerability Scoring System (CVSS) optimized the threat detection logic, ensuring precision and efficiency.
- **Behavioral Anomaly Detection:** Implemented an enhanced anomaly behavior detection algorithm using association rules. This intricate approach, involving data pattern mining using the Apriori algorithm, set new benchmarks in behavioral assessment.

2021:

- **Advanced Clustering Model:** Rolled out a fuzzy clustering anomaly detection model based on the unique properties of the Dirichlet process mixture model, allowing for a deeper understanding of employee behavior nuances under varied conditions.
- **Research & Development:** Authored a comprehensive research paper titled “Machine Learning Techniques in User and Entity Behavior Analysis”, contributing valuable insights to the field's academic sphere.

2022:

- **Asset Detection:** Developed a groundbreaking method for unknown digital asset detection and vulnerability assessment. By incorporating deep neural networks, the team achieved a harmonious blend of statistical learning and deep learning techniques, leading to enhanced asset detection and threat mitigation strategies.

2023:

- **Innovative Solutions:** Spearheaded the development of materials for various competitions and patents. Notably, the team's work in 5G application security reached the semi-finals of a nationwide competition.

- **Government Collaborations:** In collaboration with the Ministry of Industry and Information Technology of China, several intricate data security cases were prepared, addressing complex topics like "Unstructured Data Classification" and "UEBA-based Data Security Risk Attribution".

Annual Participation & Engagement:
Beyond the internal contributions, active participation was recorded in the "National Offensive and Defensive Action" organized by the Ministry of Public Security of China and the "Application System Data Security Assessment" programs organized by the Ministry of Industry and Information Technology of China. In these initiatives, defensive strategies were developed and implemented, strengthening national cybersecurity measures. Additionally, leading roles were undertaken in data security assessments, collaborating with diverse industries to elevate cybersecurity standards nationwide.

ACADEMIC ACHIEVEMENTS

[1] **Jingyang CUI**, Guanghua ZHANG, Zhenguo CHEN, et al. Multi-homed Abnormal Behavior Detection Algorithm based on Fuzzy Particle Swarm Cluster in User and Entity Behavior Analytics[J]. Scientific Reports, 2022, 12: 1-20. (JCR Q1, IF=4.996, WOS:000904416000045)

[2] Yuling GUO, Xiaojun ZUO, **Jingyang CUI**, et al. An Abnormal Behavior Detection Algorithm based on Fuzzy Clustering for Multi-Categories Affiliation of Power Entities[J]. Journal of Hebei University of Science and Technology, 2022,43(05): 528-537.(in Chinese, PKU Core Journals, IF=1.772)

[3] **Jingyang CUI**, Zhenguo CHEN, Liqin TIAN, et al. An Overview of User and Entity Behavior Analytics Technology Based on Machine Learning[J]. Computer engineering, 2022, 48(02): 10-24. (in Chinese, CCF-T2, Scopus Index, PKU Core Journals, IF=2.528)

[4] **Jingyang CUI**, The invention relates to an abnormal behavior detection method and device[P]. Chinese patents: CN114266914A, 2021.

[5] **Jingyang CUI**, JDG Literature recommendation system v1.0. Software copyright, 2018.04.25. (No:2018SR282947)

[6] **Jingyang CUI**, Research on Graph Data Mining[J]. Journal of Taiyuan Normal University (Natural Science Edition), 2018,17(01):38-40+46. (in Chinese)

[7] **Jingyang CUI**, A Method of Authors' Influence Evaluation Based on PageRank and Time Factor[J]. Journal of Langfang Normal University (Natural Science Edition), 2018,18(02):7-11. (in Chinese)

PROJECT EXPERIENCE

HEBEI GRADUATE INNOVATION PROJECT
Leader of Fund
"Author influence and literature recommendation methods in academic network based on Hadoop" April 2017 – April 2018
No.CXZZSS2017132

Research Focus: The study targeted the Microsoft Academic Graph data, analyzing the directed networks between documents, authors, and their interrelationships to evaluate document rankings and author influence. The foundational algorithm, PageRank, was enhanced to counteract its slow update cycle and its inability to account for time effects. This refined algorithm was parallelized as a MapReduce program and deployed to the Hadoop cluster.

Technical Methodology:
1. Extraction and cleansing of billion-level data employing Python, complemented by packages like pandas and numpy.
2. Crafting of a MapReduce program for the NTMP (Notave-Timefactor-MapReduce-Pagerank) algorithm.
3. Calculation and determination of author and literature rankings, culminating in the documentation of the findings.

Achievements: The NTMP algorithm showed a distinct edge over the conventional PageRank in terms of results. Specifically, with 5 nodes, it achieved an acceleration ratio of 1.6.

HORIZONTAL PROJECTS-
STATE GRID HEBEI ELECTRIC POWER RESEARCH INSTITUTE PROJECT
First participant
September 2021 – April 2022
Technical services for improving information system security detection capability

Project Focus: The project led to the creation of a comprehensive penetration testing scheme, the development of three automated penetration testing tools, and the establishment of a knowledge graph analysis system focused on information system vulnerabilities and risks.

Technical Methodology:
1. Design and formulation of a standardized methodology for information system penetration testing. This encompassed the creation of penetration test checklists, test cases, and strategic penetration test plans.
2. Research, design, and implementation of an automated toolset for information system penetration testing. Tools developed included ones for asset exposure surface scanning and analysis, comprehensive web vulnerability scanning, and automated SQL injection detection.
3. Development of a knowledge graph analysis system addressing information system risks and vulnerabilities.

Achievements: The project streamlined the evaluation procedures and criteria at the Electronic Academy, leading to a substantial reduction in evaluation time. Additionally, it bolstered the security protocols, ensuring the safe onboarding of information systems.

PERSONAL SKILLS

LANGUAGE SKILLS: IELTS: 6.0 (5.5). Achieved 6.5 in the speaking test during the initial attempt without prior preparation. Aiming for improvement in the next assessment.

TECHNICAL SKILLS: **Python, Java, MATLAB, Echars, Seaborn, ElasticSearch, Neo4j**. Familiar with principles of **common algorithms** such as regression, classification, clustering, and prediction. Proficient with **Hadoop platform** basics, construction and utilization of Hive and Hbase, and HA high availability mechanisms.