Software Engineering Lab (Prof. Kenichi Matsumoto)　B105

Overview (Software Development Methodologies, Open Source Software Engineering, Repository Mining)

The software engineering lab. uses both theoretical and empirical approach to address various problems related to software development methodologies, software quality, and software lifecycle management. Realizing full potential through student curiosity and creative thinking, and combined with a strong research network in the world, is the key to tackling new topics in Software Engineering.
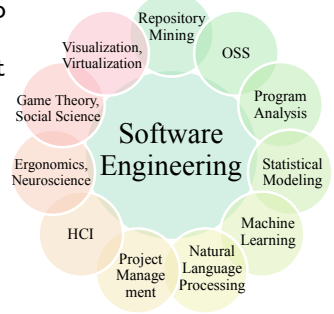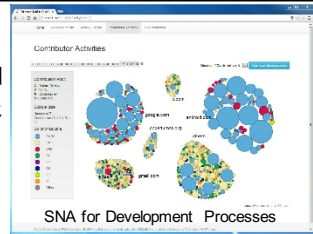
Research Topics

- Detection of reused components in software
- Visualization for runtime performance analysis
- Automatic quality analysis for OSS developers and users
- Brain activity mining of software development experts

Laboratory for Software Design and Analysis (Iida Lab.)　B105

Overview (Software design & analysis, Repository mining, Cloud system)

We study software technologies and design of virtualization and Cloud system based on software technologies. We especially focus on modeling theory of development processes, source code analysis and SDN (Software-Defined Networking). Also, we collaborate with industry partners for practical researches.


SNA for Development Processes

Research topics

★ Visualizing Systems for Software Development
　Project Replayer, ReDA, etc.
- Development Planning Frameworks and Tools
- Source Code Analysis for Development & Maintenance

- International SDN-based Cloud Testbed
- SDN-enhanced Resource Management
- Assurance Case Development and Evaluation
- Programming Education for Higher Education

Laboratory for Cyber Resilience (Kadobayashi Lab.)　A316

Overview (Cybersecurity/ Cyber Resilience/ Cloud Computing/ SDN/ NFV/ IoT/ Cyber Physical System, etc.)

The security research is indispensable for protecting private/public properties and supporting safe economic activities over the Internet. Against emerging various problems in the cyberspace, our laboratory comprehensively studies new and optimum solutions based on the central concept of Cyber Resilience.
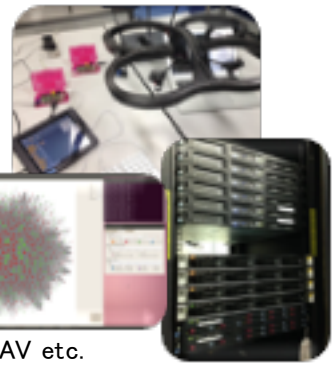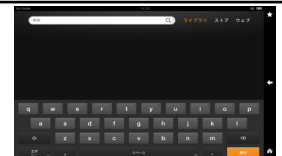

Research Topics

- Web security
- SDN/NFV in 5G Networks
- Mitigating Spear-Phishing Email Threats

- Cyber Security Exercise
- IoT Device Sensing/Security
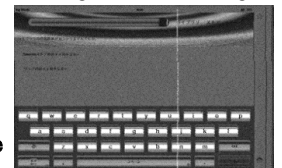- Internet/Cloud Security
★ Disaster Surveillance System using UAV etc.

Information Security Engineering Laboratory (Hayashi Lab.)　A506

Overview (Side-Channel Analysis, Fault Analysis, EM Information Leakage (TEMPEST), Hardware Trojan, Sensor Security for IoT)

In the Information Security Engineering Laboratory, we conduct research on methods to ensure hardware safety, which is the bedrock of system information security. We also conduct research to ensure the security of the entire system, including the upper layers.

Original Screen Image

Research topics

★ Password estimation on offline mobile devices
★ Revealing the Secrets of Smart Cards
★ Visualization of Side-Channel Attacks

- Cryptanalysis using EM leakage
- Fault analysis on AES key schedule
- Hardware Security for IoT Sensors

Leaked Image

Internet Architecture and Systems Lab. (Fujikawa Lab.)　B206

Overview (Ubiquitous computing, Operation, Cyber security)

Main objective of our laboratory is to establish systems and applications based on the Internet technology, especially related to ubiquitous computing, operation, and cyber security. At this open campus, we demonstrate follows which has ★.

Research topics

★ Real time visualization system for public transportation
★ Malware Analysis / Alert System
★ 4K high definition video transmission

- Operation technology for DC/NW
- Disaster recovery network with Satellite communication and Drone.
- Education program for security experts (enPiT Security: SecCap)