

Agile projects 2019

Log analysis

- Given a set of logs of communication between network nodes
 - Extract message types, message data structures and constraints from the logs
 - Create valid messages by mutational and generation-based fuzzing
- Technology: any technology and third party software can be used

Graph drawing

- Java FX component connection API
 - Create an API that draws connection with orthogonal polylines between JavaFX Node instances such that
 - the connection polylines do not enter the shape of any Node and
 - the connections are retained and redrawn after/while moving any Node
- Technology:
 - Java FX
 - No third party technology can be used

Big brother

- WiFi router surveillance
 - Create a software that runs on a WiFi router such that
 - It collects the MAC address of devices it sees
 - Dumps the traffic of any device connected and extracts web sites visited
 - Periodically sends this information to a web server where the data can be analyzed
 - Create a web server that stores data extracted by WiFi routers
 - Show information about users
- Technology: any technology and third party software can be used; OpenWRT

Remote control

- Remote control a (Raspberry PI) camera such that
 - It can be turned on and off remotely
 - It sends a screenshot and an activation report to a storage web server if motion is detected, the activation report cannot be lost
 - Live preview stream can be activated in web browsers when the device is on
 - Limited storage capacity at the device with the camera
- Technology: any technology and third party software can be used

P2P reliable storage

- Design a protocol that provides reliable storage for arrays of inexpensive devices
 - Devices continuously collect sensor data, no piece of data can be lost
 - Devices have a storage capacity of next to zero (can be emulated with virtual machine settings), and so must forward collected data periodically
 - Each array has a dedicated storage server
 - Devices in each array share the same LAN
 - Storage servers know each others IP address
 - Every storage server can go down for an undefined amount of time, data loss must be prevented

People counting

- Create an application that estimates the number of people in an image of a crowded environment
- Create a collaborative web based annotation application to validate the estimation
 - Collaborative: multiple people can annotate the same image and see each others work
 - Gamification can be considered to enhance user experience
- Technology: any technology and third party software can be used

Object detection and tracking

- Detect and track objects in a dataset created by a laser scanner
 - Detect: separate its point cloud from the background
 - Track: find and match detected object in the next frame
- Technology: any technology and third party software can be used