Kari Kuivalainen

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(SMS / Whatsapp first)

Education

- **Metropolia University of Applied Sciences** — Helsinki, Finland
  Bachelor of Engineering in Computer Science — *Aug 2010 – Jul 2017*

Experience

- **Career Break**
  Figuring things out — *Oct 2017 - Oct 2021*
  - **Automated Hydroponics Gardening System in 2021**: Got back in the game and built an automated system for monitoring and controlling a hydroponics growing environment for plants such as chilis. Features include monitoring & logging temperature, pH, water level, and electrical conductivity (nutrient concentration). Additionally a pH & EC controller maintains respective values at around a set point - appropriate liquids are introduced in the water reservoir using peristaltic pumps. Lights, pumps and other devices are relay-operated by a computer following a user-defined schedule. Comes with a web interface for remote operation and data viewing, featuring a wide variety of options and controls covering all aspects of the system. Has a fully-featured backup command line user interface for remote monitoring & control that runs nicely in a 80x25 screen via SSH. Includes some wireless sensor network ideas by implementing automatic sensor discovery and data acquisition in the local area network. Various microprocessors and development boards may pair with the master node and deliver data from different types of sensors wirelessly creating a more or less synchronized data logging system.
    (NOTE: This section describes the project that is still work in progress as if it was finished or feature complete.)
    · Wireless sensor network · Electronics · Automation · Web interface · Remote control · Data logging and presentation · · Database · Shell · SSH · Linux · C · JavaScript · HTML ·
  - **Full Stack Open in 2021**: Decided to learn new software development technologies. Started the Helsinki University online course on Full Stack programming.
    (NOTE: This section describes the project that is still work in progress as if it was finished or feature complete.)
    · Front end · Back end · JavaScript · NodeJS · ReactJS · REST API · GraphQL · MongoDB · Git ·
  - **Botanical Experiments in 2019**: Cultivated plants in hydroponic systems to great success. Built a temperature monitoring system that could be accessed remotely in the local area network.
    · Hydroponics · Automation · ESP8266 · Linux · Arduino · DS18B20 · Sensor ·

- **Finnish Meteorological Institute, Radar & Space division** — Helsinki, Finland
  Research Assistant / Research Engineer — *Jan 2016 - Sep 2017*
  - **Research Engineer**: In 2017 was promoted to research engineer. Had more responsibilities in addition to the assistant's duties. Built a command line interface testing suite and ran tests on the various electronic subsystems of the test model of the on-board computer for the Mars METNET Weather Station. That also doubled as the Bachelor's thesis project. Helped troubleshoot some weather radar hardware and built a graphical user interface for operating it with TCL/TK.
    · C · TCL · TK · Linux · Shell · Electronics · Oscilloscope · Soldering · Testing · Freescale · Embedded ·
  - **Research Assistant**: Worked on various projects, including the MEDA project, which culminated in getting a pressure and humidity sensor suite to fly onboard the NASA Mars 2020 Rover. Tasks included setting up pressure, humidity and temperature measurements for instruments, building accessories for measurements, updating measurement software and manual.
    · TCL · Linux · Shell · Git · LaTeX · Electronics · Soldering · Testing · Building ·