



# Tom Young

## Skills

**Systems Engineering:** Architecture, development and integration of systems incorporating sensors, electromechanical devices, real-time software, communications networks and information technology.

**Algorithm Development:** Extensive experience of using MATLAB and Python for development and testing of mathematical algorithms. This includes computer vision, pattern recognition and advanced control systems.

**Programming:** 20 years of commercial experience in many languages including C, C++ and Python.

**Communications and Networking:** Zigbee and other wireless stacks, as well as TCP/IP. Industrial monitoring and control using Modbus, CAN, M-Bus and other serial protocols.

**Server Side:** Design and implementation of data pipelines, particularly for time-series data. Contributor to InfluxDB (open source time series database).

**Web Interfaces:** Enough Javascript skills (including Angular/Vue/React) to build basic web interfaces.

**Technical Leadership:** I have led teams of engineers delivering 18-month+ mixed hardware and software projects with multiple sub-contractor companies. I have worked with academic research partners and have supervised PhD and undergraduate placement students.

**Technical Communication:** Confident and experienced at communicating with people at all levels, from presenting business cases to senior management to writing manuals for field technicians.

Chartered Engineer (IET). British citizen. Full clean UK driving license. Have previously held both DV and SC levels of UK security clearance. CSCS card. NPTC chainsaw qualified.

## Experience

### April 2012 to present: Freelance Engineering Consultant trading as Tomcat Engineering

- Principal architect of a high-end smart metering system based on Python, Embedded Linux and Zigbee. Over 10,000 units are now deployed in UK homes.
- Technical lead for a large data analysis pipeline and associated website. Data from multiple sources is queued in Kafka, stored into KairosDB and analysed using Python-based machine learning algorithms which are scheduled via Airflow.
- Designed and built a web-based commissioning platform for large solar power parks, including code to communicate with over 70 different models of hardware via serial connections or Modbus-TCP.
- Designed and built a monitoring platform (on-site software, back-end server and central website) for commercial scale solar power plants, based on Python, MQTT and InfluxDB.

- Proof-of-concept automated analysis of aerial thermal images for a specialist diagnostic application.
- Tens of thousands of lines of high quality Python, C++ and other software delivered.

### **2007 to 2012: Principal Engineer (Control and Monitoring Systems), Quiet Revolution Ltd.**

Quiet Revolution made an innovative 6kW vertical-axis wind turbine. I joined the company at an early stage and designed the control system and monitoring architecture, then I recruited and led the team that implemented and managed these systems, including:

- Control hardware including inverter drives, custom sensors, enclosures, wiring looms and metering.
- Real-time control software, optimising energy yield and providing safety-critical fault-detection.
- Linux/GPRS based supervisory control & monitoring system, including custom hardware.
- Linux web and database servers to monitor and control ~200 turbines worldwide in real time.
- Testing and certification, including EMC, radio and safety testing, and design file for CE marking.
- Manufacturing, installation and maintenance manuals and technical support.
- Research and development: using MATLAB to model, analyse and optimise the system.

### **2006 to 2007: Higher Scientist, BAE SYSTEMS Advanced Technology Centre**

Developed collision-avoidance software for the Wildcat autonomous ground vehicle.

### **2003 to 2005: Research Scientist, BAE SYSTEMS Advanced Technology Centre**

Worked on a variety of software and mathematical projects in the Advanced Information Processing Department. Coded in C++, MATLAB and Java. Conducted applied research into navigation and computer vision algorithms.

### **1998 to 2003: Sponsored Undergraduate Engineer**

One year spent in research labs working on various telecommunications technologies. Three summer placements working on everything from automated text analysis to microwave circuits.

## **Education**

Emmanuel College, Cambridge University — MEng Engineering (distinction) with BA (first class) Electrical and Information Science.

Masters project: Automatic Classification of Scanning Electron Microscope Images using Neural Networks.

## **Interests**

Sailing, rock climbing, paragliding, fell running and mountain biking. Member of Glossop Mountain Rescue Team.

Please contact me if references are required.