

Side Quests by Sanjeet Chatterjee

A collection of projects, experiments and ideas I've built and explored.

SiriControl [[Medium](#)] [[Github](#)] [[The MagPi](#)]

SiriControl allows makers to add Siri voice control to anything imaginable. You create a note with Siri e.g. “*Note turn on the lights*”, and this is synced to a Gmail account. The magic is SiriControl polling the inbox for new notes and executing relevant actions. It was featured in [The MagPi](#) and blogged by others. Many people have reached out to share their creations. [Here](#) is an engineer from Spain controlling a PLC setpoint with SiriControl.

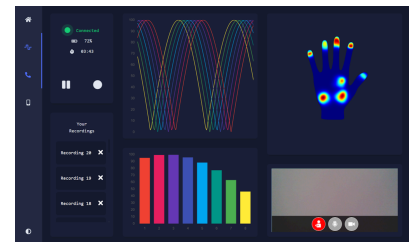
R3-14, Robot Assistant [[Medium](#)] [[Youtube](#)] [[The MagPi](#)]

R3-14 is a Raspberry Pi robot assistant with features including Google Assistant, 433Mhz home automation, IR TV control, my own SiriControl, face tracking, remote web control and a 3D printed shell. Beginner projects are boring - I wanted to create something epic as my first project and figured everything out on the fly. It was featured in [The MagPi](#), on [Hackster](#) and [Hackaday](#).



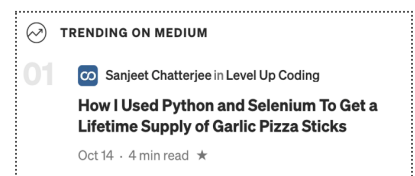
The SmartGlove App [[Youtube](#)] [[Github](#)]

The SmartGlove is a wireless pressure-sensitive glove paired with real-time visualisations to aid physiotherapists with diagnosis. As a team, we won multiple awards, including the [Sainsbury Wellcome Sponsor Award](#) at the [Big Bang Competition](#). I built the web app using React and Chart.js for beautiful visuals, and SocketIO for real-time updates between the glove microcontroller and connected users. Taught myself modern web development.



Blog [[Medium](#)]

I started writing online with a WordPress blog when I published SiriControl. Since then, I moved over to Medium and have reached 300,000+ readers with \$1000+ earned. I experimented with tutorials, listicles and stories. This [article](#) went viral on [Reddit](#) and hit the front page on Medium. In my [last](#) post, I Rickrolled my entire class with Twilio.



Paintr [[Youtube](#)] [[Github](#)] [[Medium](#)]

Paintr is a collaborative digital canvas where your smartphone becomes your paintbrush. Built with React, SocketIO and the Canvas API. I wanted to experiment with the Gesture Sensor API on mobile. Hosted on Vercel and Fly.



Dash [[Medium](#)] [[Marvel](#)]

Dash is a concept service to centrally co-ordinate drivers, with an adaptive routing system to spread out and minimize congestion. I developed an app [prototype](#) in Marvel. I won third place at the TeensInAI London Hack, after pitching at the CogX AI festival.

The GPT-2 Experience [[Youtube](#)] [[Medium](#)]

I fine-tuned GPT-2 on transcripts of Elon Musk on the Joe Rogan Experience and generated some episodes with Google TTS. I also published it on [Spotify](#).

LLMs for Data Science [[Github](#)] [[Paper](#)]

For my final year project at Imperial, I developed domain-aware prompting methods for LLMs working on data science notebooks. This included execution state metadata, DataFrame dependency graphs and AST parsing, combined with more advanced prompting techniques to improve on the original ARCADE benchmark.

The SmartBand [[Medium](#)]

For my EPQ, I developed a smart headband with line-of-sight interaction for intuitive gesture control of smart home devices. I built custom modules to act as the medium in between, using IR and MQTT for selection and communication between the headband and modules, respectively.

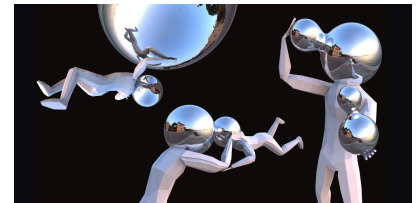


Cybersecurity [[Github](#)] [[Pitch](#)]

During university, I developed an interest in cybersecurity. I solved machines on Hack The Box and joined the Imperial CTF team which came second place at pwnEd. I interned at WithSecure, where I explored malware development. I built C2 (Command & Control) infra, with a C++ Windows implant and NodeJS control server. Features include remote commands, activity logging, encryption, persistence and obfuscation.

White City Sculpture Challenge [[Pitch](#)]

This was a purely creative team challenge around designing a sculpture / installation on the Imperial White City Campus. We imagined the theme of otherworldly beings with reflective orb structures to evoke a feeling of awe, whilst creating a sense of community. Won third place in the competition.



SimpliCam Bot [[Github](#)]

We installed a security system in our house. It turned out the SimpliCam needed a subscription to actually be usable. I wrote a Selenium Python bot which detects motion and injects JavaScript to record video, before being uploaded to my personal cloud. Hosted it on Heroku.

HomeLab

I set up a homelab system to self-host some apps and media. Essentially, a Docker compose file coupled with some utility scripts for backup / restore to Backblaze with Restic. I front the services with Nginx reverse proxy and it sits within my Tailscale network. It is then accessed from the private *labs.sanjeet.co* subdomain. Added logging and metrics for a nice overview of the system.

Panopto2Playlist [[Github](#)]

We used Panopto for watching lecture recordings at Imperial College. It was slow, blocked downloads and lacked some features. It turns out they used unsigned static URLs for video files so I wrote a script that scrapes these with an internal API and generates a VLC playlist for a snappy, feature-packed watching experience. I shared it with classmates to use.