

# BORIS BOYANOV TOMOV — Portfolio

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## Linens N' Love Connected — Full-Stack Non-Profit Logistics Platform

Project Manager & Full-Stack Developer (Code for Good Berkeley) · 2023 – 2024

**Tech stack:** Django, React, MySQL (AWS EC2/RDS), Google Maps API, GitHub Actions

**Problem:** Linens N' Love coordinates hotel linen donations and deliveries across chapters and partners; legacy tools were fragmented, manual, and error-prone for onboarding, routing, and reporting.

**Solution:** Designed and built a multi-tenant web platform to centralize operations: automated onboarding, email workflows, role-based access, donation/recipient tracking, and geo-aware logistics with Google Maps.

### Highlights:

- Led end-to-end architecture and delivery across React frontend and Django REST backend.
- Normalized data model for chapters, donors, recipients, and deliveries; built admin dashboards and exports.
- Implemented secure auth, environment-based config, and AWS EC2/RDS deployment with backups.
- Improved performance and reliability for a user base spanning 15+ countries.

### Impact/Outcomes:

- Cut onboarding time and manual data entry via automation and templated flows.
- Clear visibility into deliveries and inventory improved coordination across chapters.
- Scalable cloud deployment and logging increased operational uptime and maintainability.

[Organization Site \(Linens N' Love\)](#) · [Team Page \(Mention\)](#)

## ELALCANCE — Assistive Feeding Robotic System (CV + RL)

ML/CV Engineer & Data Pipeline (Recursive Pioneers) · 2024 – 2025

**Tech stack:** OpenCV, MediaPipe, PyTorch, Hugging Face, ACT Reinforcement Learning, Teleoperation datasets

**Problem:** Design a low-cost, reliable assistive feeding system to help users who struggle with motor control, requiring safe detection of mouth open/close events and smooth, adaptable motion control.

**Solution:** Built a computer vision trigger using MediaPipe-based face/mouth landmarks for robust open-mouth detection; collected and curated teleoperation data to train an ACT policy for generalizable behavior across environments.

### Highlights:

- End-to-end data pipeline: collection scenes, dataset cleaning/labeling, and upload to Hugging Face.

- Trained ACT policy with validation splits and behavior cloning baselines; emphasized safety and reliability.
- Project recognized in UC Berkeley course materials (Intro to Cognitive Science, Spring 2025).

**Impact/Outcomes:**

- Reliable mouth-open detection enabling hands-free feeding trigger.
- Robust policy performance across lighting/background changes due to diverse teleop data.
- Demonstrated feasibility of affordable assistive robotics with consumer-grade hardware.

[Project Page](#)

## Code for Good Berkeley — Website Revamp

Full-Stack Developer & Maintainer · 2024 – 2025

**Tech stack:** React, JavaScript/TypeScript, Animations, Airtable API, GitHub Pages/Actions

**Problem:** The student organization's site needed a modern, maintainable frontend with dynamic content, application forms, and donation/contact integrations—without overburdening volunteers.

**Solution:** Rebuilt the site in React with a clean component architecture and a simple content pipeline via Airtable, adding tasteful animations and accessible UI patterns; automated deploys on main branch.

**Highlights:**

- Implemented forms, Airtable integrations for contacts/donations, and responsive design.
- Optimized bundle size and asset loading; simplified content updates for non-technical members.
- Continuous improvements and periodic upgrades for stability and security.

**Impact/Outcomes:**

- Clearer storytelling and easier onboarding of new members/sponsors.
- Reduced maintenance overhead through modern tooling and automations.

[Live Site](#)

## Robotic Finger — Independent Joint Control & CV Teleoperation

Embedded/Controls + CV · Mar 2025 – May 2025

**Tech stack:** ESP32, FreeRTOS, PD control, FSR sensors, OpenCV/MediaPipe, LabVIEW, TCP/JSON

**Problem:** Create a robust single-finger manipulator that can be driven either programmatically or via human hand tracking, with responsive force control and smooth motion.

**Solution:** Implemented an ESP32 + FreeRTOS motor controller with PD loops and FSR-based adaptive grip; built a CV pipeline to extract joint angles via MediaPipe and stream over TCP to a LabVIEW GUI for synchronized teleoperation.

**Highlights:**

- Real-time control loops and debounced sensing for stable grip.

- Low-latency streaming to LabVIEW for visualization and operator control.
- Designed UI for status/telemetry and simple mode switching.

**Impact/Outcomes:**

- Smooth, responsive teleop and autonomous behaviors across test objects.
- Demonstrated safe grip and quick recovery from disturbances.

[Slides \(Google\)](#) · [Demo Video \(YouTube\)](#)