



Project Daredevil: Object Detection for the Visually Impaired

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Objective

- To create a system that will take in images using a stereoscopic camera (StereoPi) and perform object detection and distance calculations
- To help people who are visually impaired detect and navigate their surroundings to give them hands-free independence on their day-to-day activities

Timeline

ACTIVITY	PERIODS									
	1	2	3	4	5	6	7	8	9	10
Planning										
Materials (Funding/order)										
H - Rpi Assembly (Funding)										
H - Testing (rPi single camera only)										
H - Data Acquisition										
S - Image recognition										
S - Python OpenCV script										
S - Training Set Dev (YOLO framework)										
S - Automate Data Input										
S - Feedback										
Testing and Evaluation										

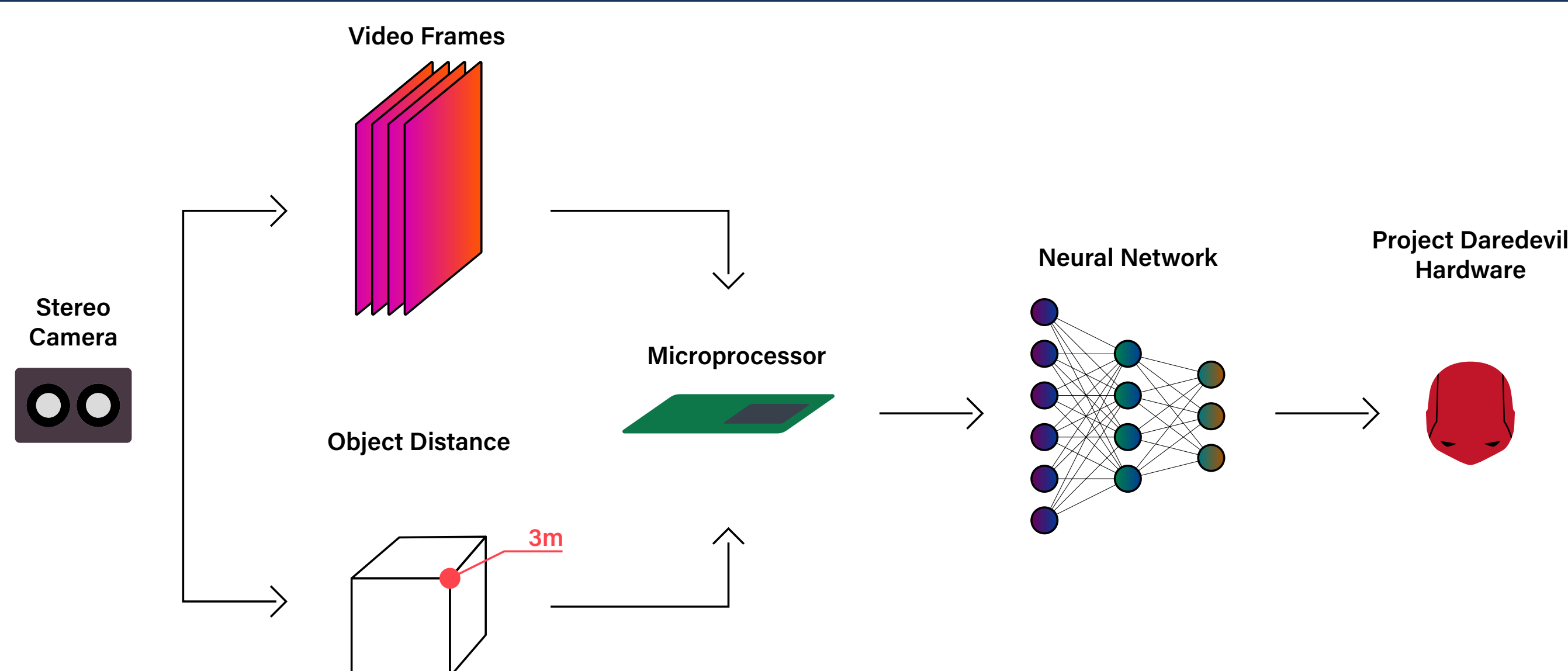
Materials

- OpenCV
- Tensorflow/YOLO
- Python
- Jetson board
- Camera (stereoscopic)
- StereoPi
- Objects to use as obstacles
- Can-do positive attitude 😊

Progress

- Completed tasks:
 - Object detection
 - Depth detection
- Future goals:
 - User feedback via sound
 - Improving portability of the device
 - Fine-tuning object detection
 - Gathering unique training data

Design



References

- Ragunandan, Apoorva, et al. "Object Detection Algorithms for Video Surveillance Applications." 2018 International Conference on Communication and Signal Processing (ICCSP), 0 Nov. 2018, doi:10.1109/iccsp.2018.8524461.
- Othman, Nashwan Adnan, et al. "An Embedded Real-Time Object Detection and Measurement of Its Size." 2018 International Conference on Artificial Intelligence and Data Processing (IDAP), 24 Jan. 2019, doi:10.1109/idap.2018.8620812.

