

## Abstract

While fully autonomous cars are still far from being available to the public, the technology to develop them is known. We present the idea and design of a self-driving car that could traverse any parking lot/parking garage and park itself without the input of a human. These vehicles have the potential to fix the issue of motor vehicle crashes that are happening in the US every day.

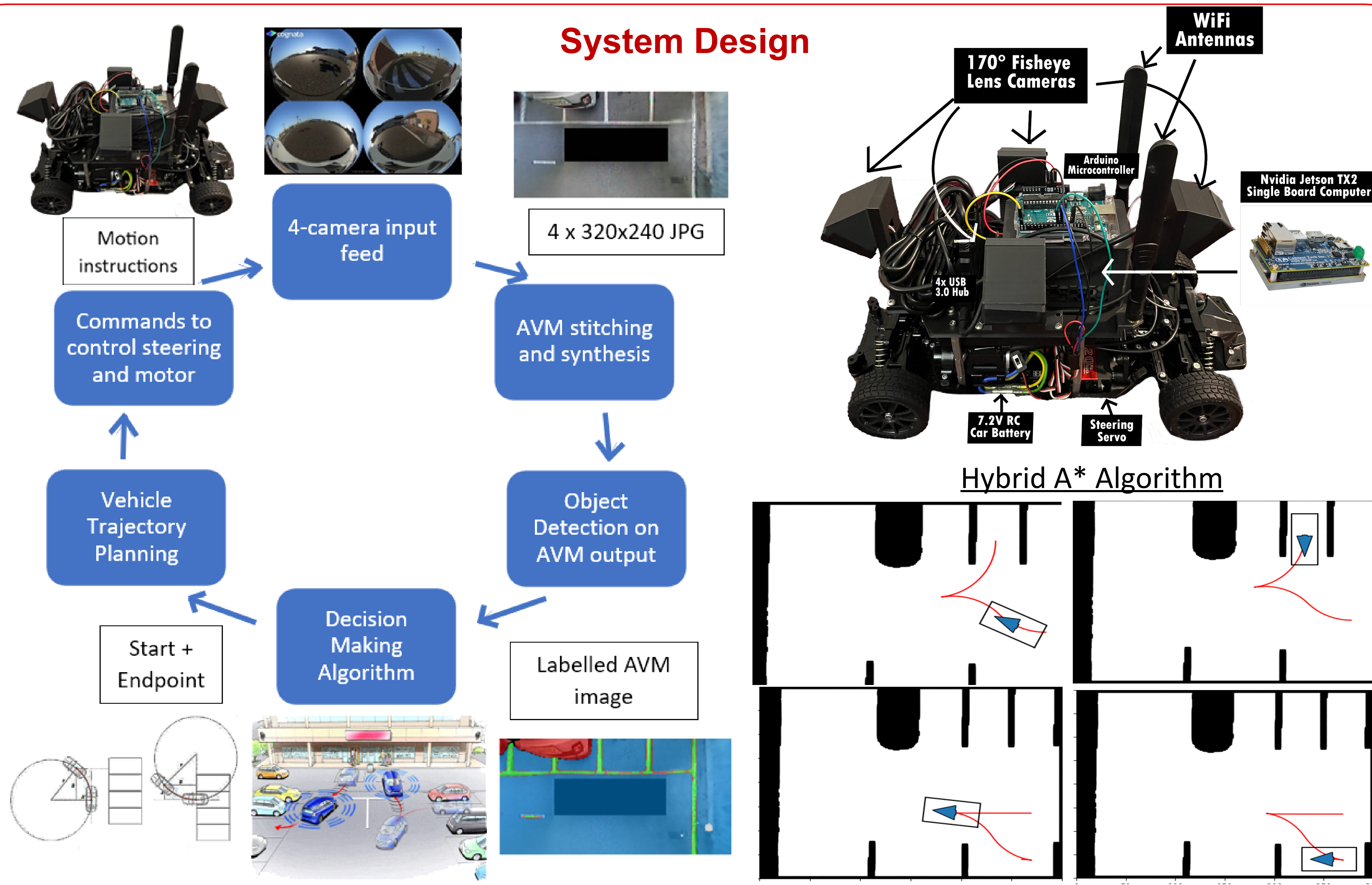
## Motivations and Objectives

### Motive

- Tens of thousands of annual parking lot motor vehicle accidents in the US [1]
- Research parking lots rather than highway and road driving
- Contribute to car autonomy

### Objective

- Test feasibility with a modified RC car
- Gather environment data through optical means (less popular than LiDAR)
- Use openCV, tensorflow, tensorRT, CUDA to capture and classify surroundings
- Use master-slave control system to command our hardware



## Project Challenges

### Software

- Older Jetson platform (2017)
- Outdated guides
- Installing Jetson-specific libraries
- Building from source
- Software not supported
- ARM architecture or software versions
- Runtime and performance

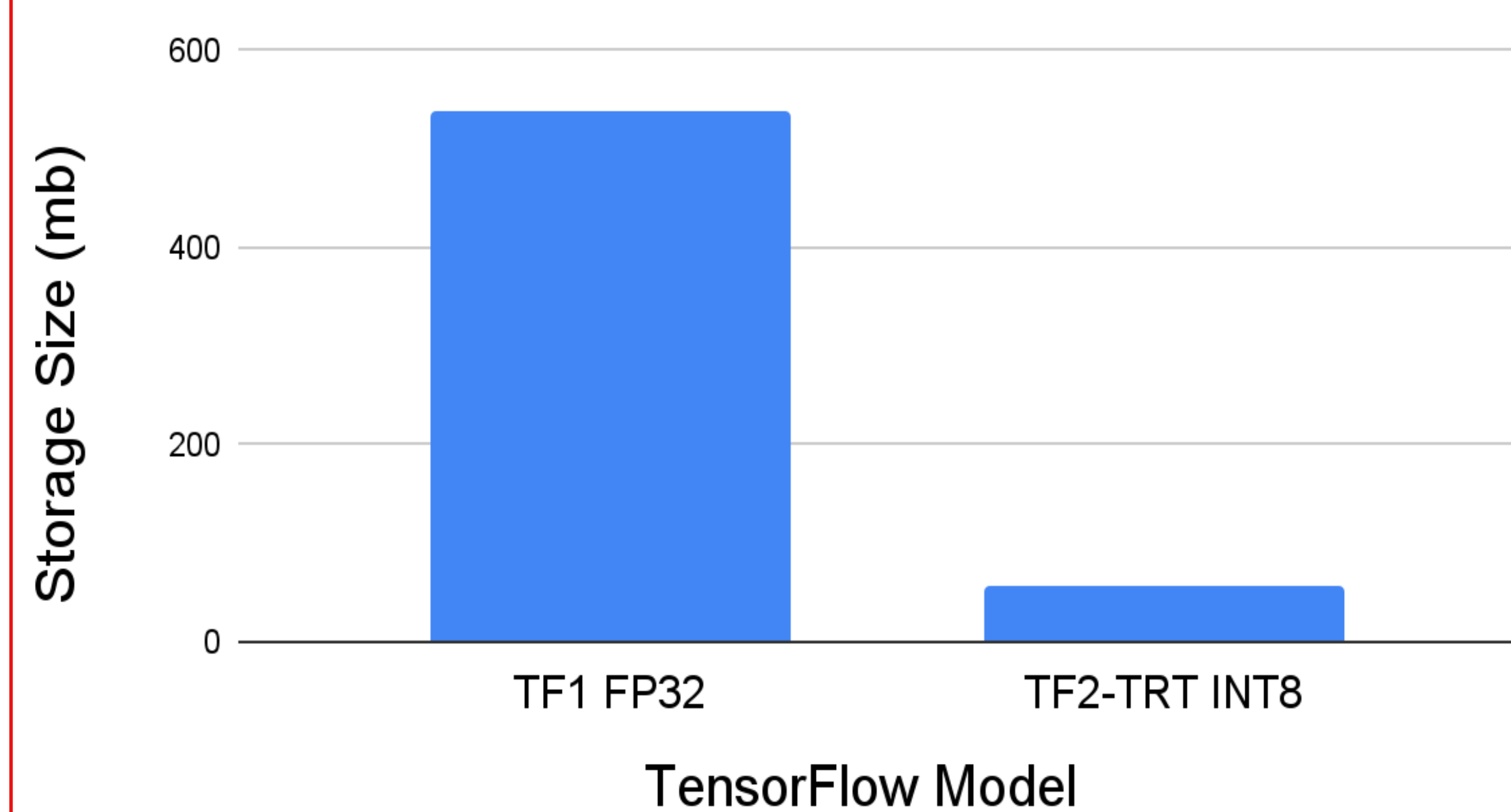
### Hardware

- Using custom carrier board
- Switch to microcontroller
- Custom test environment

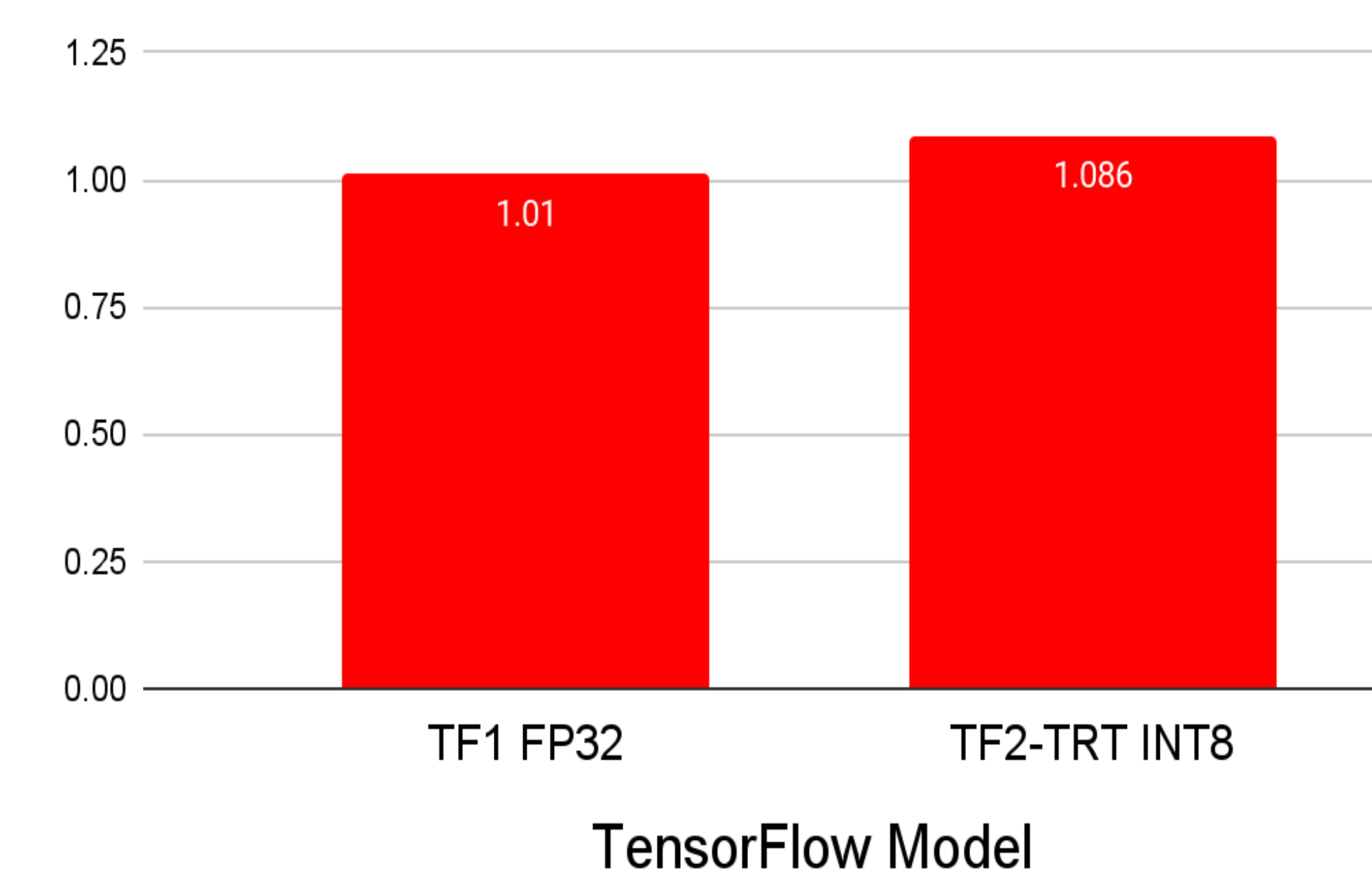


## Results and Cost Analysis

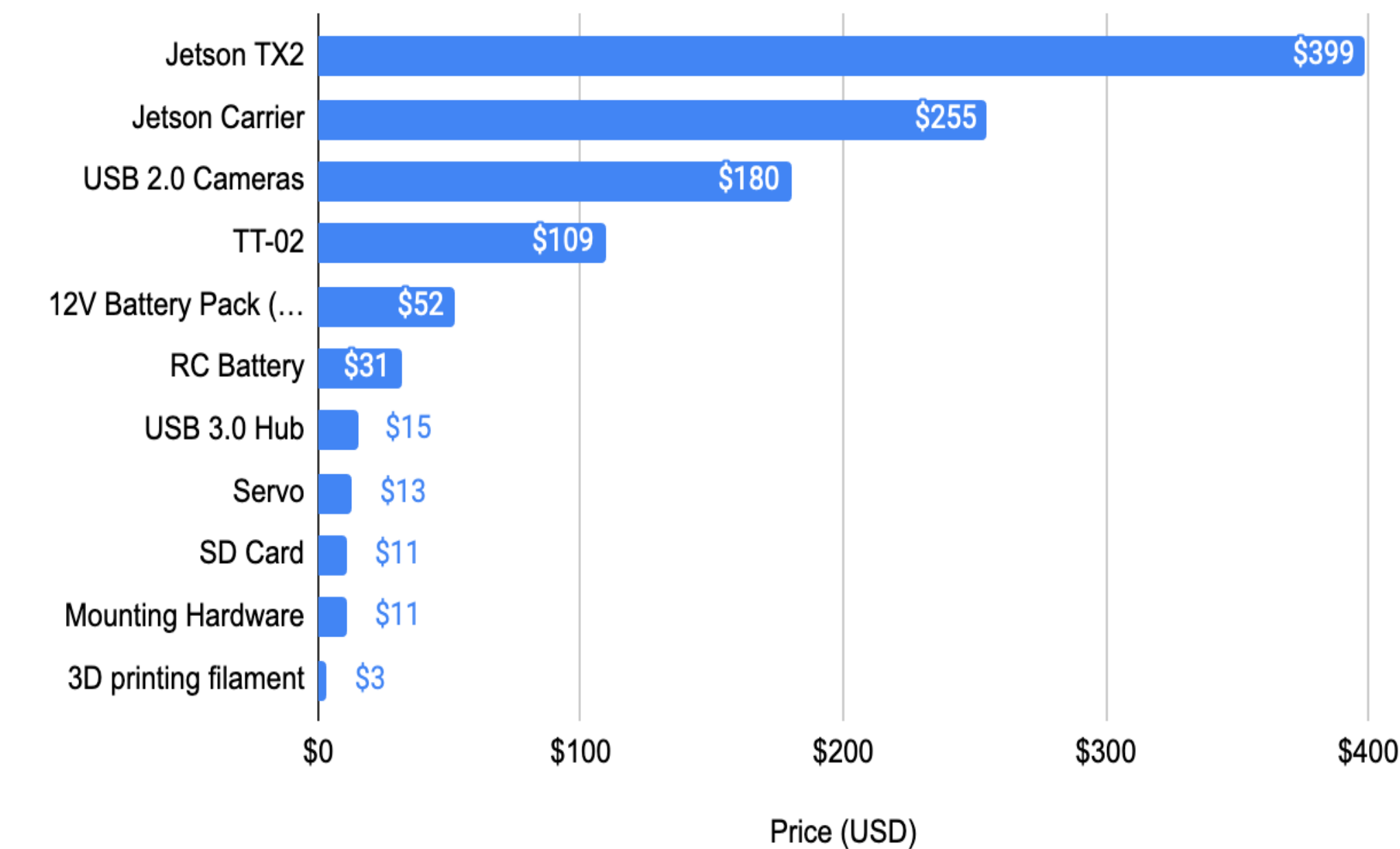
Size of Trained Model (mb) vs. Model Type



Inference Performance vs. Model Type



Cost Analysis  
Total: \$1,080



## References

[1] <https://www.nsc.org/road/safety-topics/distracted-driving/parking-lot-safety>

## Acknowledgement

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