



Project Proposal for Preventing Wrong Way Driving Through Intelligent Transportation Systems

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IMPORTANCE

- National wide from 2004 to 2011 an annual average of 350 people die in 270 crashes [1]
- Drivers who are impaired, distracted, or confused
- 44% of fatal incidents occur in rural areas and 56% in urban areas [2]



GOALS

- ✓ Detect and alert the wrong-way driver (WWD)
- ✓ Warn oncoming right-way drivers
- ✓ Alert ADOT of WWD in hopes of correcting the WWD
- ✓ Utilize Intelligent Transportation Systems to solve WWD

FOCUS

- Rural Interstates
 - Interstate 17
 - Exit Ramp 333
- Intersection of Interstate 17 and Mountaineer Rd.
 - Kachina Village



PROJECT LOCATION

Interstate-17
Mile 334.14

I-17 x Mountainaire Rd.
Exit Ramp 333

Kachina Village – AZ

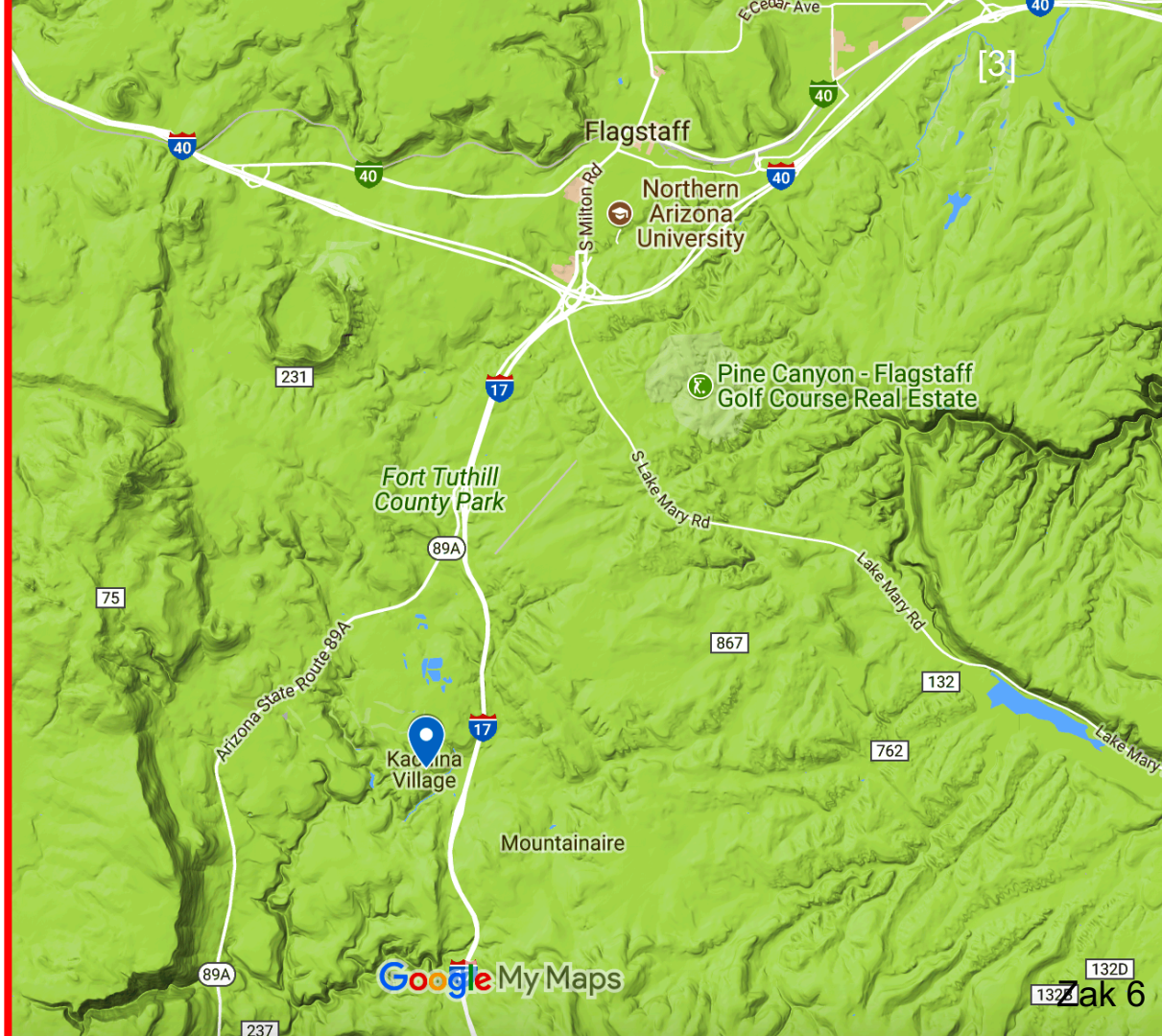


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PROJECT SCOPE



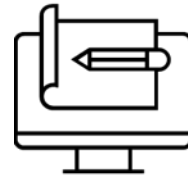
Detection
System



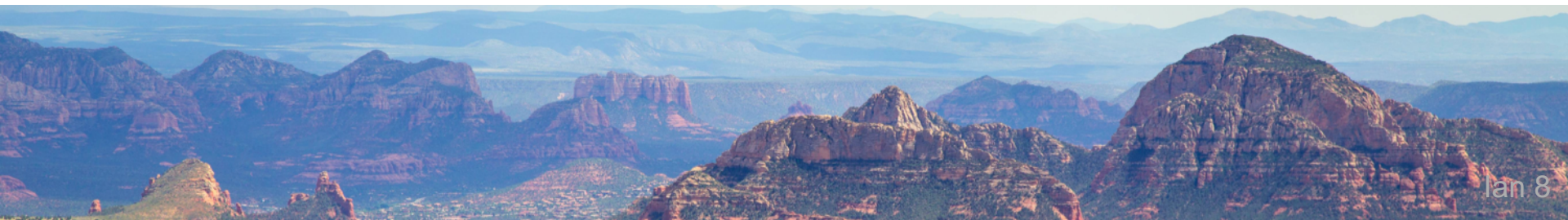
Communication
System



Warning
System



Testing &
Prototyping



PROJECT SCOPE

Detection System

1. Decide technical specifications for system considering:
 - Cost
 - Performance
 - Technical aspects
 - Installation
2. Parts Requisition
3. Assembly and testing
 - Driving test
 - Multi-lane driving test
 - Environment test



PROJECT SCOPE

Warning System

1. Utilize decision matrices for both types of warning systems.
2. Select most appropriate solutions.
3. Create construction documents showing construction details of the proposed warning systems.



PROJECT SCOPE

Communication System

1. Develop a Decision Matrix for Wrong-Way Driver Communication System.
2. Develop a Decision Matrix for Right-Way Driver Communication System.
3. Order required parts.
4. Test the communication system in the designated environment.



PROJECT SCOPE

Power Supply

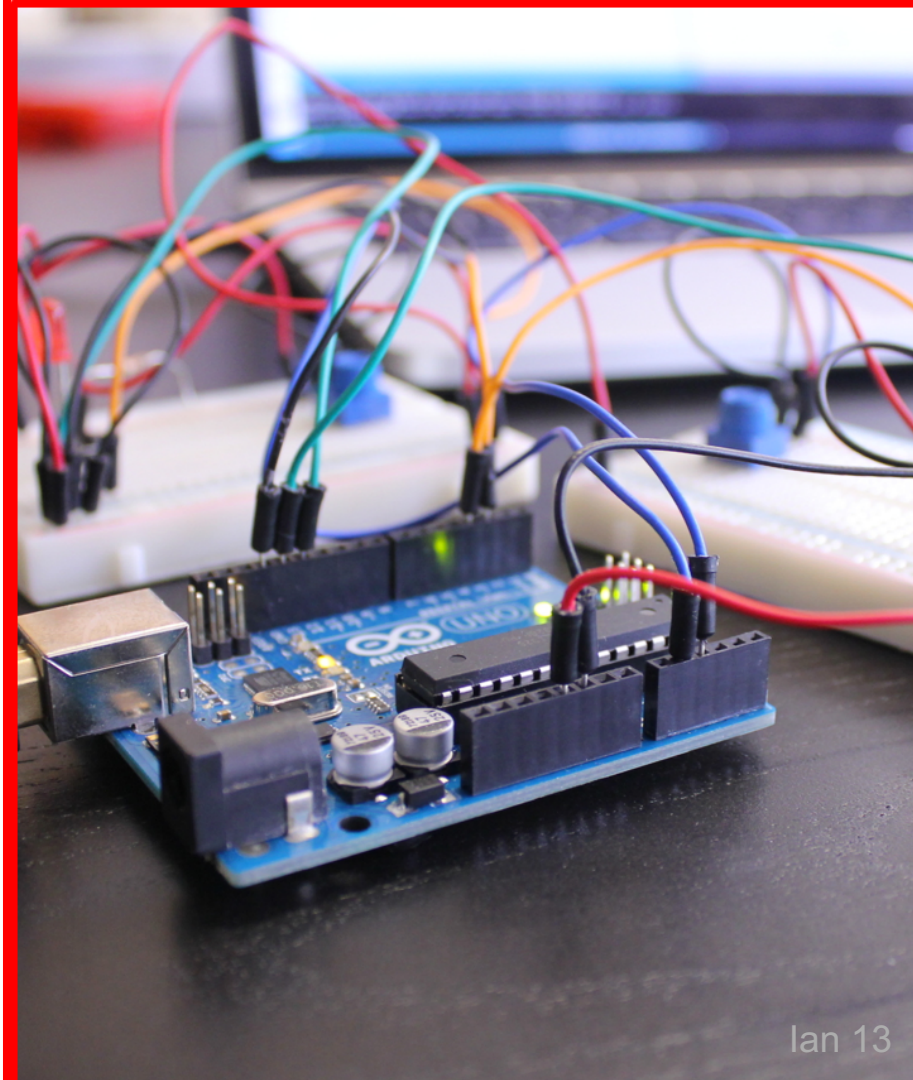
1. Research renewable methods to generate power based on the natural resources available on the designated area.
2. Make a decision matrix for the most feasible method.
3. Order required parts to build a generator or acquire one.
4. Test the power supply in the designated area.



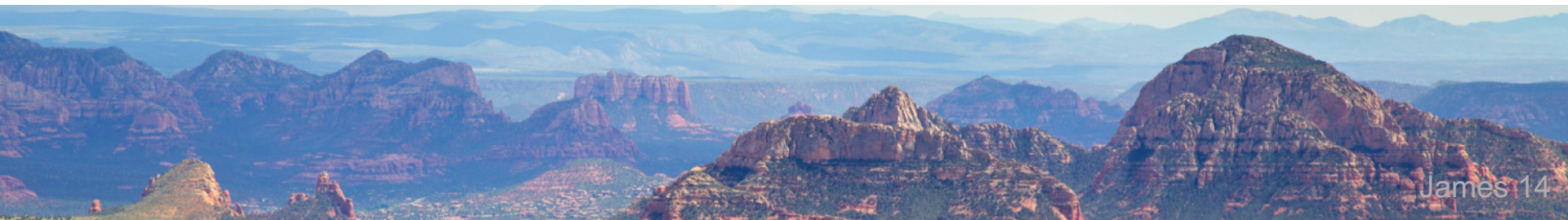
PROJECT SCOPE

Testing & Prototyping

1. Assembly final proposed design
2. Perform testing
3. Propose final design



SCHEDULE



STAFFING^[4]

Composition of Billing Rates						
	Project Engineer	Civil Engineer	Electrical Engineer	Lab Technician	Administrative Assistant	Intern
Base Pay	\$ 50.00	\$ 40.00	\$ 46.00	\$ 25.00	\$ 20.00	\$ 14.00
Benefits	30%	29%	30%	33%	33%	0%
Overhead	60%	40%	40%	80%	20%	20%
Profit	15%	15%	15%	15%	15%	15%
Total	\$ 120.00	\$ 85.00	\$ 95.00	\$ 70.00	\$ 35.00	\$ 20.00



PROJECT BUDGET

	Staff	Billing Hours	Hourly Rate (\$/Hr)	Total Cost
Personnel	Project Engineer	63	\$ 120.00	\$ 7,560.00
	Civil Engineer	101	\$ 85.00	\$ 8,585.00
	Electrical Engineer	124	\$ 95.00	\$ 11,780.00
	Lab Technician	80	\$ 70.00	\$ 5,600.00
	Administrative Assistant	49	\$ 35.00	\$ 1,715.00
	Intern	184.5	\$ 20.00	\$ 3,690.00
Total Personnel		601.5	-	\$ 38,930.00
Equipment		\$		1,700.00
Testing Expenses		\$		500.00
			Total	\$ 41,130.00





QUESTIONS?

References

- [1] S. Simpson and R. Karimvand, "Automatically Detecting Wrong-way Drivers on the Highway System," 22nd ITS World Congress, 2015.
- [2] Google Maps
- [3] F. Baratian-Ghorghi, H. Zhou and J. Shaw, "Overview of Wrong-Way Driving Fatal Crashes in the United States", ResearchGate, 2014.
- [4]"Salary.com", CompAnalyst from Salary.com, 2017. [Online]. Available: <http://salary.com>. [Accessed: 27-Nov- 2017].

References - Pictures

- [1] S. Simpson and R. Karimvand, "Automatically Detecting Wrong-way Drivers on the Highway System," 22nd ITS World Congress, 2015.
- [2] Google Maps
- [3] F. Baratian-Ghorghi, H. Zhou and J. Shaw, "Overview of Wrong-Way Driving Fatal Crashes in the United States", ResearchGate, 2014.
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