UTC Project Information	
Project Title	Virtual Reality Vehicle Simulator Phase 1
University	University of Alaska
Principal Investigator	Orion Lawlor
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Funding Source(s) and Amounts Provided (by each agency or organization)	University of Washington PacTrans $55,952 University of Alaska $ 55,952
Total Project Cost	$111,904
Agency ID or Contract Number	69A3551747110
Start and End Dates	September 16, 2019-February 15, 2022
Brief Description of Research Project	Modern game simulation technology can put people in the driver's seat virtually, so they can safely experience accidents like skids and rollovers, and walk through various hazardous scenarios to understand and visualize the physical forces involved in accident scenarios. This project's goal is to provide a single integrated hardware/software platform capable of training operators of offroad vehicles such as All-Terrain Vehicles (ATVs). Because the people that would benefit most from this training, outdoor-oriented young people, are the least likely to seek it out, we "gamify" the training experience by building an attractive outdoor world, and putting interesting challenges in it.
Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here	We have built a working offroad vehicle simulator and several driver training scenarios, shown below. We chose the driver training scenarios to match common accident types, such as overturns and collisions (CPSC, 2020), and passengers carried unsafely, as well as address common underlying causes such as excessive speed and lack of situational awareness.

	Drive to the lake — Park in the truckbed — Take friends up the mountain — Jump the house?! — Mountain pass — Racing
Impacts/Benefits of Implementation (actual, or anticipated)	Our simulator is usable today, and can help viscerally illustrate the mechanics of common offroad vehicle accidents. Our developed offroad vehicle simulation and graphics assets can be applied to a variety of scripted and open-world interactions, and can be reused and repurposed for different training scenarios and situations. Our WebGL version has the capacity to easily reach many people, and as we learn to live with COVID we hope to extend our VR hardware and software to provide a richer and more immersive experience. There are several promising approaches we hope to examine to address simulator sickness issues discovered during VR testing.

Web Links
• Reports
• Project Website
	The functionality described above is all playable now in a web browser using WebGL here:
	  https://olawlor.github.io/AK_ATV/
	The simulator's Unity code and graphical assets are available under a permissive open-source license here:
	  https://github.com/olawlor/AK_ATV/