



F1/10 YELLOWTAILS

AUTONOMOUS RACING

FOR EVERYONE

FACULTY MENTOR: ISAAC SHAFFER

BOWEN BOYD, HANYUE WANG, KYLE WATSON, AND JORDAN WRIGHT

PROJECT

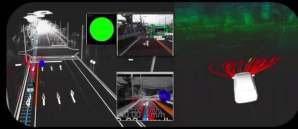
FLAGSTAFF'S F1/10 ROBO-RACING

F1/10
Autonomous Racing

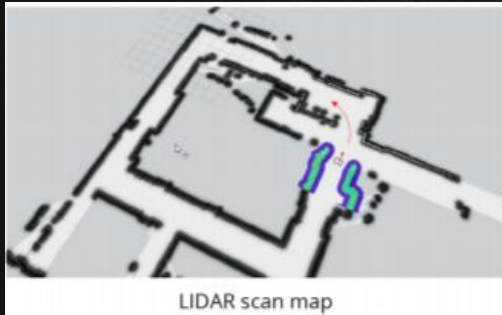
1/10 the scale. 10 times the fun!

Build. Drive. Race.

Perception. Planning. Control



A SUMMER CAMP FOR HS STUDENTS



LIDAR scan map

SYSTEM

ROBOTIC OPERATING SYSTEM



MOVING AUTONOMOUS RACE CAR



NVIDIA Jetson LIDAR Camera IMU Motor Controller Stereo Camera Telemetry

CLIENTS

AT NORTHERN ARIZONA UNIV.



DR. NGHIEM

- ASSISTANT PROFESSOR
- CYBER PHYSICAL SYSTEMS RESEARCHER



DOAN NGUYEN

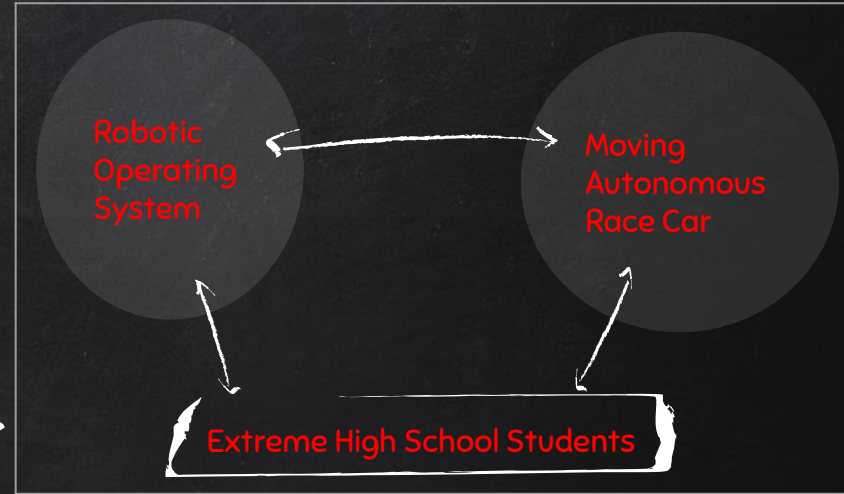
- GRADUATE RESEARCH ASSISTANT

WHAT'S THE ISSUE?

ACCESSIBILITY

Universal Configuration

Command Line Interface



```
PS C:\> Get-Childitem "MediaCenter\Music" -rec |
?? Where-Object {$_.Parent.FullName -and $_.Extension -match "\.mp3"} |
?? Measure-Object -property length -sum -name sum
??
Count           : 1287
Average         : 441276.89543887
Sum             : 567427457
Maximum        : 217467457
Minimum        : 228
Property       : length

PS C:\> Get-Childitem CIM_BIOSElement | select biosVer, manu, ser# | Format-List
BIOSVersion    : 110026L - 4866886L Ver 1.00PARTIAL
Manufacturer   : DELL
SerialNumber    : M211164

PS C:\> (cmdSearcher.ps)
?? $Shell = New-CimJob
?? WHERE-Object {$_.Name -eq "Epson Stylus Color 740"} |
?? $? | Format-Table
??
Name ManagementObjectInstance |> cmd\Win32_PrintJob
-----
Document = Manual Manifesto - Public
JobId = 4
Owner = user
Priority = 4
State = Idle
Name = Epson Stylus COLOR 740 SEQ-P 2, 6

PS C:\> [url] - "http://www.mca.com/powerbell/ps1.asp"
PS C:\> [url] - "http://www.mca.com/powerbell/ps1.asp"
PS C:\> [url] - "http://www.mca.com/powerbell/ps1.asp"
Title
MMS: What's Coming In PowerShell W2
PowerShell Release at MMS
MMS: System Center, Foundation Technologies

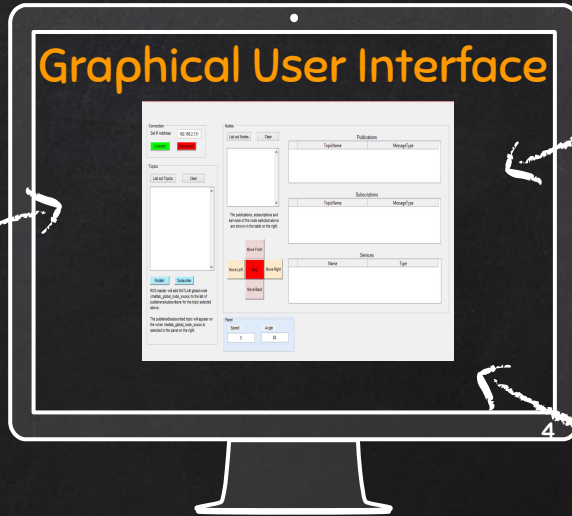
PS C:\> $env:version.ToString().Insert(0, "Windows PowerShell: ")
Windows PowerShell: 1.0.0.0
PS C:\>
```

OUR ENVISIONED SOLUTION:

- NO MORE COMMAND LINE INTERFACE
- A SCALABLE STRUCTURED SYSTEM
- ACCESSIBILITY FOR ALL HIGH SCHOOL STUDENTS

Robotic Operating System

- A system of packages for perception, planning, and control



Moving Autonomous Race Car

- Nvidia control board installed on the vehicle

High school students

THANK YOU!

ANY QUESTIONS?