# DRIVERLESS

# High Accuracy Low Latency Perception for Autonomous Racing





# We Develop Full Stack Autonomous Race Vehicles







# International Collaboration with TUDelft

Janutan

Velodyne



# **TUDelft**



# **Autonomous Pipeline Overview**









# **Perception Task**



## Wide Angle Camera

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# **Stereovision Pair**









# **Viewing Region Requirements**







# Camera Byncharei Setiection



# **Perception Software Overview**





# **2D Localization - YOLOv3** Two Stage Networks



## Single Shot Detection Networks









# **3D Localization** Monovision: KeyPoints + PnP



#### Stereovision: Nerian Scenescan









# Latency Stack







# Lessons Learned - USB3



Turn on Cameras





# Lessons Learned - Stay Calibrated!







# Lessons Learned - Become one with the data







#### **?? Label**





# Open Sourced Pipeline and Dataset at: github.com/cv-core Thank you.



