

Embedded Motion Control

Group 5

Paul Blatter

Kevin van Doremalen

Robin Franssen

Geert van Kollenburg

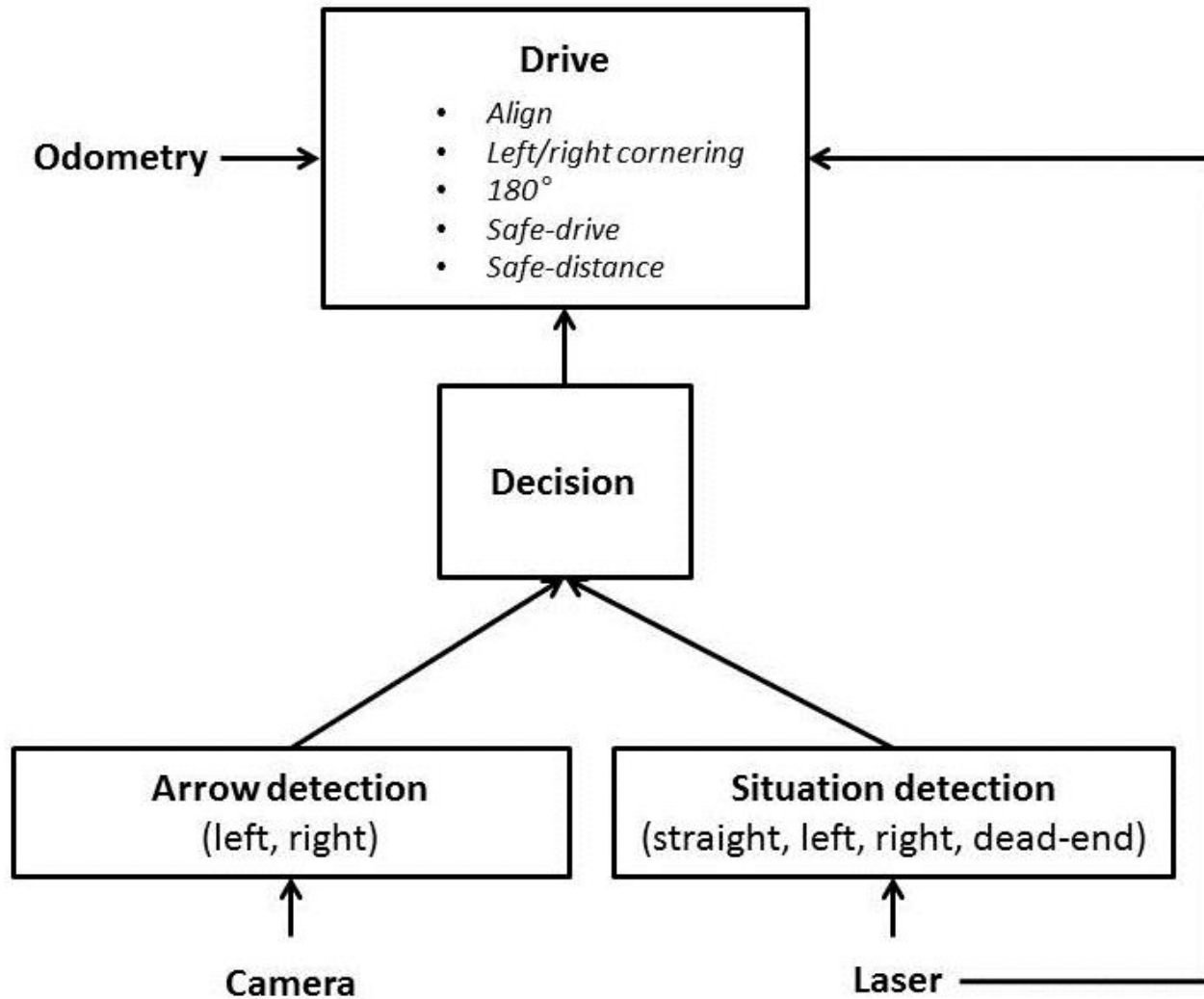
Niek Wolma

TU / **e**

Technische Universiteit
Eindhoven
University of Technology

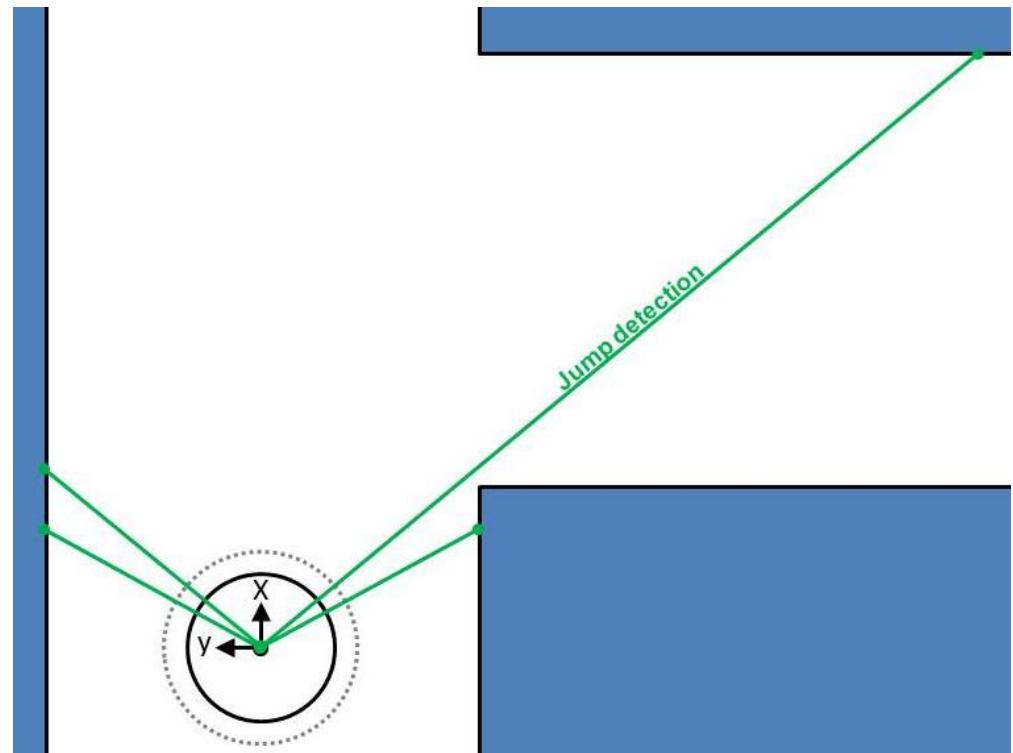
Where innovation starts

Program architecture



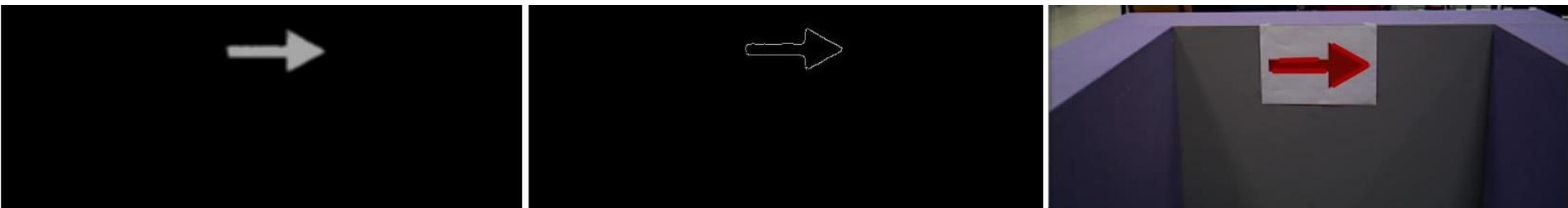
Situation detection

- *Input: Laser*
- **Detect pathways using ‘jumps’**
- **Detect dead-end by measuring Cartesian distance between points.**
- **Robustness: averaging**
- **Output:**
 - Left
 - Straight
 - Right
 - Dead-end



Arrow detection

- *Input: Camera*
- **RGB → HSV image**
- **Blurred image and edge detection**
- **Hough transform**
- **Direction detection**
- *Output: no detection, left, right*

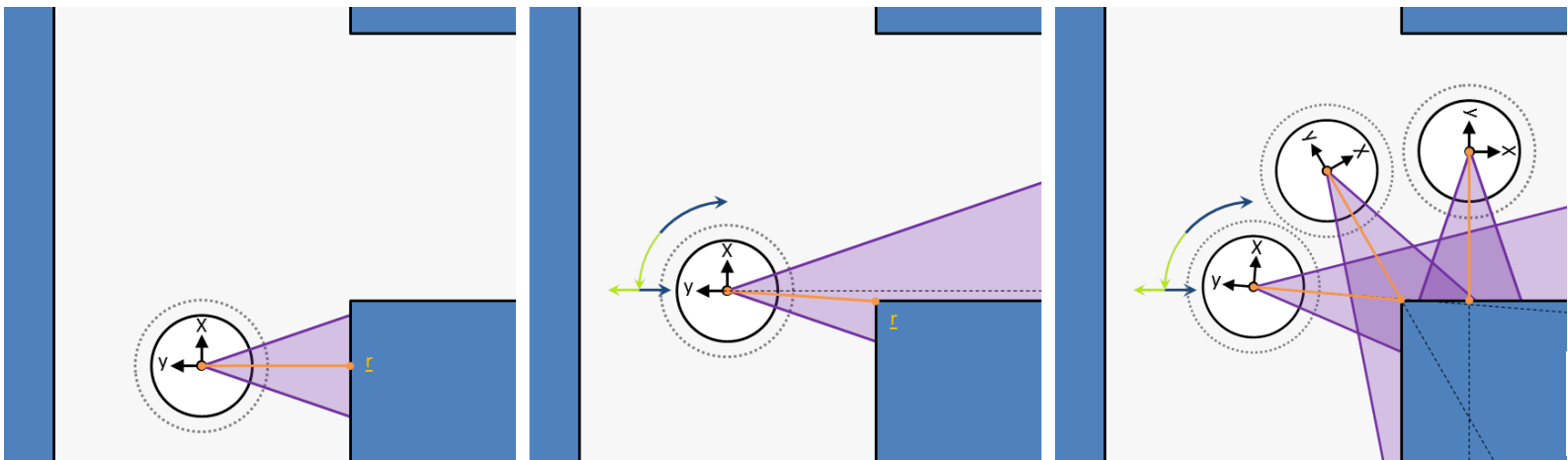
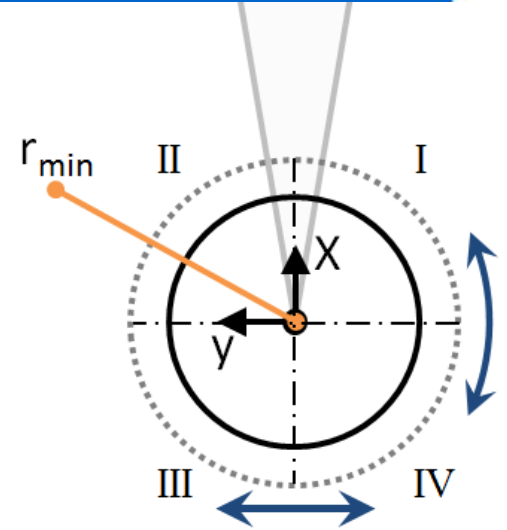


Decision

- *Input: situation, arrow direction*
- **Left hand rule (LHR)**
- **Arrow detection overrules LHR (only on T-junction)**
- **Averaging for robustness**
- **Expandable with more complex maze solving algorithms**
- *Output: drive direction*

Drive

- *Input: Laser, odometry, drive decision*
- **Aligning (straight)**
- **Left/right-cornering**
- **180°**
- **Safe-drive and safe-distance**
- *Output: linear and angular velocity to PICO*



Conclusion