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Semantic Robotic Vision Challenge - Las Vegas 2009

Our Team

- Dr. David Gustafson – prof. advisor
- Michael Marlen – team leader
- Claudia Chaudhari
- Aaron Chavez
- Eric Marlen

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Software League – Our approach

- **Training Phase**

- **Download Top 5 images from Google**
- **Created 5 to 15 images of 3D models (screen shots)**
- **Used SURF to extract feature points**
- **Took approximately 5 minutes**

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Software League – Our approach

. Phase 2

- Compared each image to every single image from training phase**
- Kept track of number of feature points per object per image**
- Highest number of feature points indicates the object**
- Place bounding box around feature points (with removing outliers)**

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Robot League – Our approach

- **Our robot - Pioneer P3AT**
- **Camera – Canon G9**
- **1 laptop running Windows 7, one running Linux**
- **Navigation – not reactive, looking for objects of interest**
- **Take a picture when arrived at a point of interest**

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What Worked

- **Software League – we were able to match some specific objects**
- **Robot League – navigation worked well, got a lot of coverage**

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What didn't Work

- **Carpet is very feature-rich**
- **Camera was set to manual focus**
 - **Produced grainy pictures**
- **Memory issue**
- **Bounding Boxes were too large**

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What We Learned

- **Can't just compete using SURF or specific object only algorithms**
- **It is essential to have generic object detection**
- **Need an “any-time” training algorithm so we don't have to be conservative with time**