Seminars in Artificial Intelligence and Robotics

Computer Vision for Intelligent Robotics

Presentation guidelines and tips

DIPARTIMENTO DI INGEGNERIA INFORMATICA
AUTOMATICA E GESTIONALE ANTONIO RUBERTI

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Inspired by:
Ten Secrets to Giving a Good Scientific Talk,
Mark Schoeberl and Brian Toon

Typical slot organization

Four/five presentations

Each presentations: 15 minutes

Questions: 5 minutes

Presentation slides

Usually 1.5-2 minutes per slide

- In any case, mandatory no more than 20 slides

Avoid dense slides

- In case, add one more slide

Use relatively large fonts

- No smaller than 16 pts

Presentation components

Introduction

Related Work and main contributions

Method

Results

Conclusion/Summary

Introduction

Problem statement

- Describe the problem your are going to address and its challenges.

Tip: You may use a picture or a video to describe the problem.

Motivations

- Convince people that the problem is important

Related Work and Contributions

Report relevant related work

- Try to understand from the paper what are the closest works and have a look at least to their abstracts.

Tip: You may report block diagram/pictures taken from such papers.

Contributions

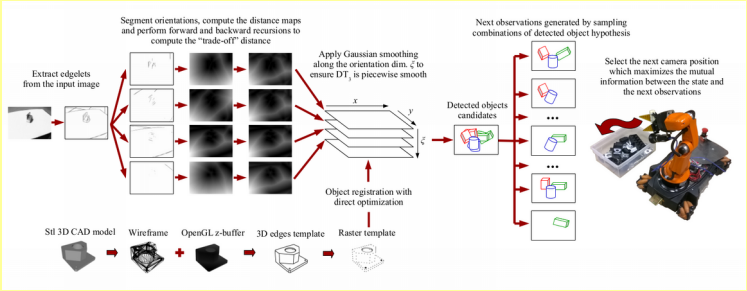
- What are the main contributions of this paper? E.g.,
  - A new method
  - A new implementation (or a more efficient one, ...)
  - A new dataset
  - An open-source implementation
  - ...

Tip: Use a bullet list, no more than 3 points.

Method (1/2)

Provide an overview of the approach

Tip: Use a block diagram/pictures that describe the whole method in a slide, e.g.



Describe the single steps, highlighting the "original" ideas.

Try to avoid equations. Show only very simple equations
Ask yourself - is showing the equation important?
Is it central to my talk?

Basic model description

$$\rho^i(t+dt) = \rho^i(t) + n^i_\rho(t)dt$$ → Features' depths

$$T(t+dt) = T(t) + \dot{T}(t)dt, \quad T(0) = 0$$ → Body's translation

$$\Omega(t+dt) = Log_{SO(3)}(\exp(\widehat{\Omega}(t))\exp(\widehat{\omega}(t)dt), \quad \Omega(0) = 0 \quad v(t+dt) = v(t) + \alpha(t)$$ → Body's rotation

$$\omega(t+dt) = \omega(t) + w(t)dt$$ → Body's rotational velocity

$$\alpha(t+dt) = \alpha(t) + \xi(t)dt$$ → Body's translational acceleration

$$\xi(t+dt) = \xi(t) + n_\xi(t)dt$$ → Body's translational jerk

$$w(t+dt) = w(t) + n_w(t)dt$$ → Body's rotational acceleration

$$\gamma(t+dt) = \gamma(t) + n_\gamma(t); \quad \gamma(0) = \gamma_0 \quad \text{from calibration}$$ → Gravity

$$T_{cb}(t+dt) = T_{cb}(t) + n_{T_{cb}}(t)dt, \quad T_{cb}(0) = T_{cb} \quad \text{from calibration}$$ → Camera-Body translation

$$\Omega_{cb}(t+dt) = \Omega_{cb}(t) + n_{\Omega_{cb}}(t)dt, \quad \Omega_{cb}(0) = \Omega_{cb} \quad \text{from calibration}$$ → Camera-Body rotation

$$T^j_{ref}(t+dt) = T^j_{ref}(t) + n_{T^j_{ref}}(t)dt, \quad T^j_{ref}(\tau_j) = T(\tau_j) \quad j = 1, \ldots, \nu(t)$$ → Group j translation

$$\Omega^j_{ref}(t+dt) = \Omega^j_{ref}(t) + n_{\Omega^j}(t)dt, \quad \Omega^j_{ref}(\tau_j) = \Omega(\tau_j)$$ → Group j rotation

$$\omega_{bias}(t+dt) = \omega_{bias}(t) + n_{\omega_{bias}}(t)dt$$ → Rotational velocity bias

$$\alpha_{bias}(t+dt) = \alpha_{bias}(t) + n_{\alpha_{bias}}(t)dt$$ → Translational acceleration bias

$$y^i(t) = \pi\left(R^j_{tot}(t)y^i_{\tau_j}e^{\rho^i(t)} + T^j_{tot}(t)\right) + n^i(t)$$ → "Ideal" vision measurements

$$y_{imu}(t) = \begin{bmatrix} \omega(t) + \omega_{bias} \\ e^{-\widehat{\Omega}(t)}(\alpha(t) - \gamma(t)) + \alpha_{bias} \end{bmatrix} + n_{imu}(t)$$ → "Ideal" IMU measurements

Method (2/2)

The method is the core of the paper: provide the “take-home message” that summarize such method.

If necessary, provide insights about the implementation.

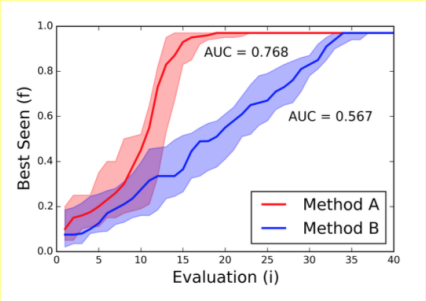
Tip: briefly and easily describe the method/implementation “tricks”

Results

Report a brief summary of the main results.

Tip: Report only the most salient results.
Do some advertisement of your paper here :) ...

Tip: Clear plots are better than many numbers, but some relevant numbers are welcome.



Conclusions

Summarize the results and implications.

Connect the results with the provided claims.

Reiterate the take-home message.

Tip: Use a bullet list, no more than 3 points.