Augmented Reality
Interest Points Based (IPB)

Offline
- Initialization

Online
- Choose Closest Keyframe
- Create Intermediate Image
- Matching Against Intermediate Image
- Pose Estimation

Harris Extractor and NCC matcher
Levemberg-Marquerdt with Tukey M-estimator
Particle Filters

• Generate hypotheses (particles)

• Evaluate generated particles using likelihood

• Get problem solution by combining the best particles
Particle Filters

Projection

3D Model

Image plane

$E_i$

$e_{i,j}$
Particle Filters
IPB + Particle Filters

- Top-down approach
- Generate poses hypotheses using a gaussian pdf applied to previous pose
- Evaluate the likelihood as the reprojection error for all particles
- Composes the poses hypotheses generating the new pose of the camera
Preliminary Results

- Bottom-up Interest Point Based

IPB + Edge Based + Particle Filters

• If I have TIME and good results!!!!!

• Maybe in PhD research

• Scenes of the next chapter...
Research Interests

• Augmented Reality
  – Model Based
  – SfM/Slam
  – Projective AR

Research Interests

• 3D reconstruction from images
  – SfM and Real-time SfM
Research Interests

• Augmented and Virtual Reality, Computer Vision, Image Processing, Computer Graphics, Algorithms, C/C++ Programming...

• C/C++, VXL, OpenCV, OpenGL, Matlab, ARToolkit, OGRE, Qt
Where?

GRVM/UFPE: www.cin.ufpe.br/~grvm
Francisco: www.cin.ufpe.br/~fpms