Automatic Creation of 3D Environments from a Single Sketch Using Content-Centric Networks

presented by: Edvin Bruun

Intro / Overview

- **Content-centric Networks (CCN)**

- **Application - *sketchTo3D***

- **How does it work?**

  - **searchGateway**

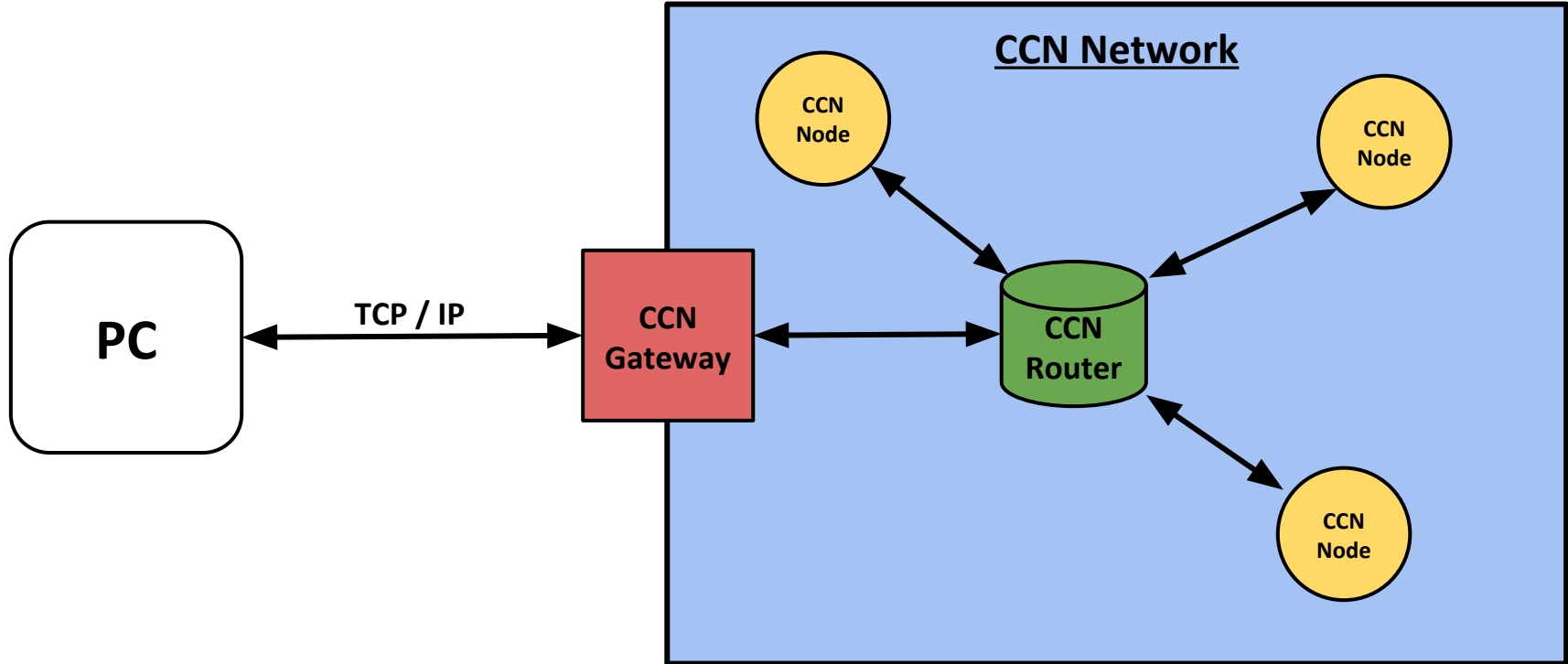 - **searchProxy**

- **Future**

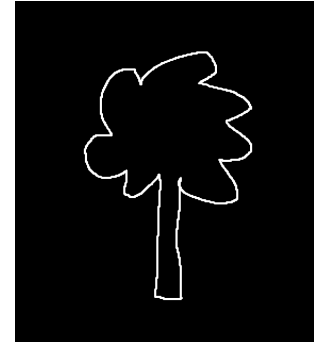**Input**

Output

Content-Centric Network

- **CCN: Ask network for apples**
  - **Get apples**

- **Ordinary: Search for apples**
  - **Get apples from a source**

- **How do you like them apples?**

Content-Centric Network

Application

- *sketchTo3D*

- **QBE (Query by Example)**
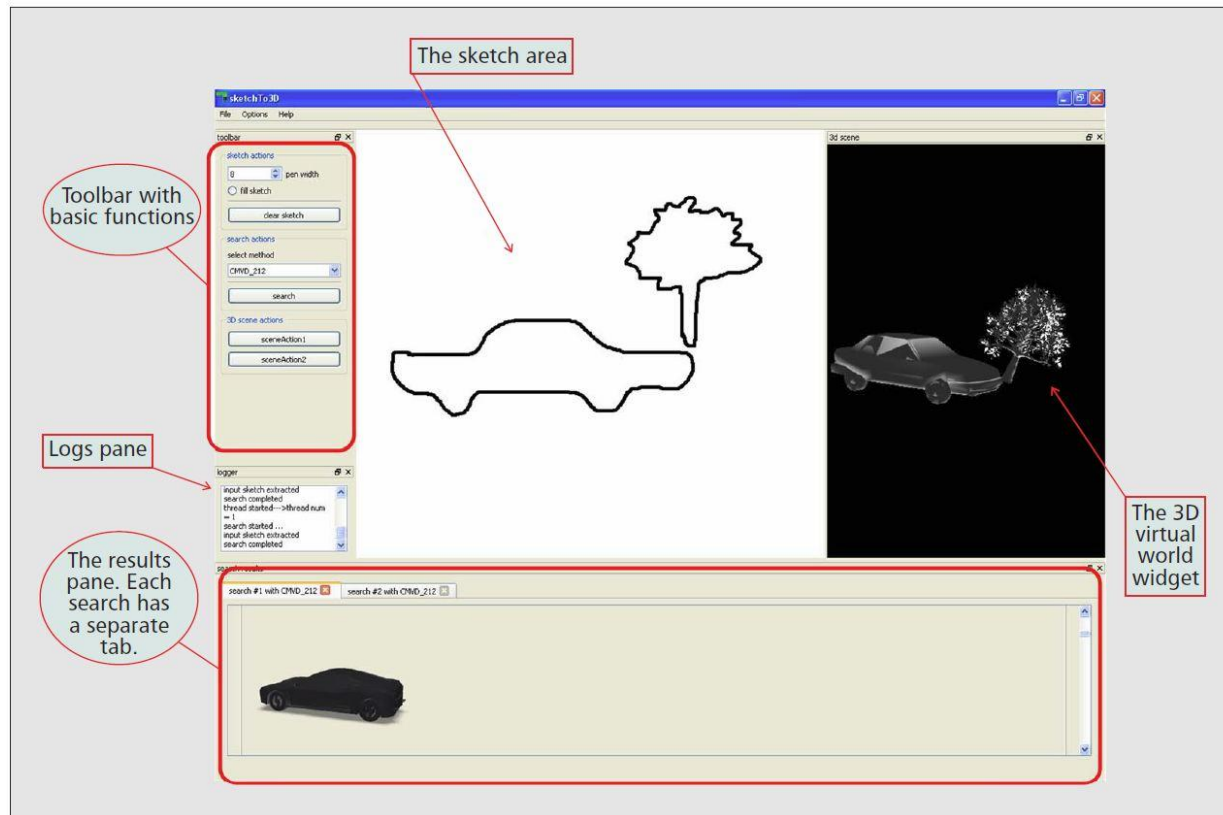
- **From sketch to 3D**

  - **Position**

  - **Scale**

  - **Orientation**

1) Inverted

2) Cropped, Resized(100x100px), Converted (description vector)

Application

The sketch area

Toolbar with basic functions

Logs pane

The results pane. Each search has a separate tab.

The 3D virtual world widget
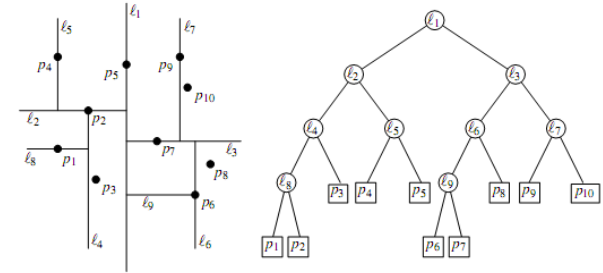
searchGateway

- **Written in Java**

- **Exposes CCN network to TCP/IP**

- **Queries network / caches result**

- **Sends file to client via FTP**

- **Also written in Java**

- **Tables with description vectors**

- **3D Model**

  - **18 different views**

- **Stored as K-D-Tree**

  - Shameless plug: D7013E Computational Geometry

Experiment

- 4 VMs (Ubuntu)

- 3D model database (SHREC 2008)

- Divided over VMs

Conclusion / Future Work

- **sketch -> 3D with CCN**

- **Orientation**

- **Web app**

  - **larger tests**

- **3D video streams**

Questions?