

Trends in Mobile and Cloud Computing: Class Projects

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MobiProg

Nilesch Mishra, Luis D. Pedrosa

MobiProg:

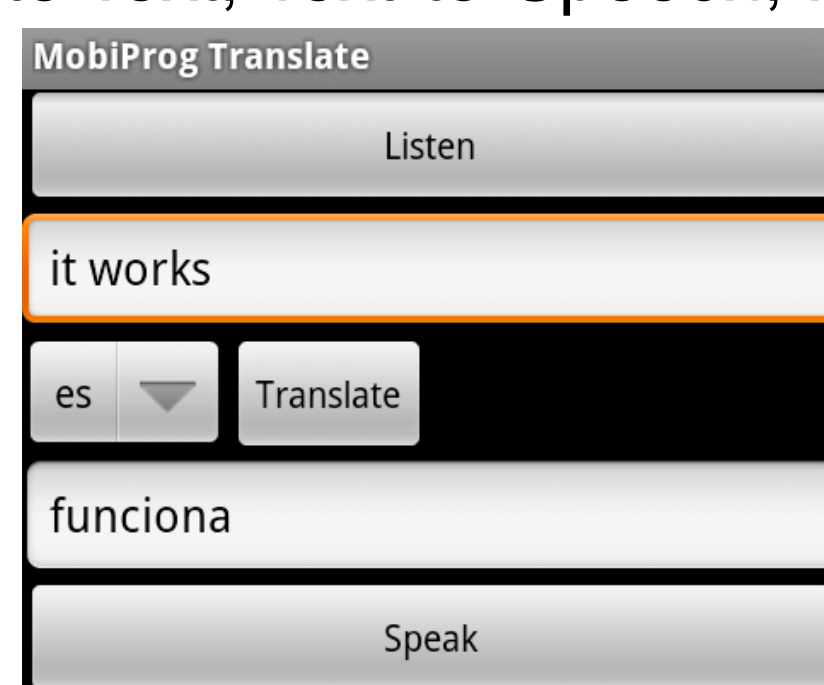
- Transparently Partition Applications Between Phone and Cloud
- Optimizes Energy & Delay

Profiler:

- Captures Resource Usage in Runtime
- Predicts Future Usage to Decide How to Partition

Translation App:

- Capture Audio; Recognize Speech; Translate Text; Text-to-Speech; Play Audio.



Snakes & Dragons

Joongheon Kim

Snake Video Game Variant:

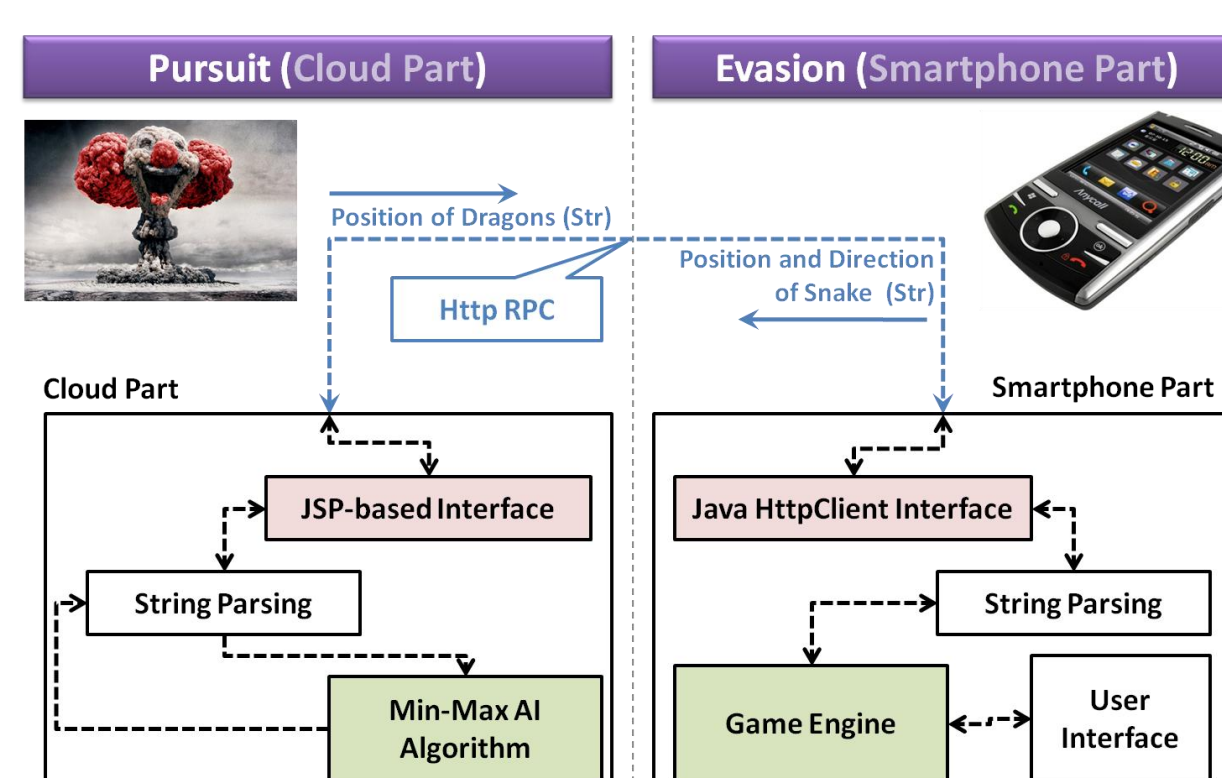
- Points Earned by Eating Items
- When Snake Eats Items: Snake Grows; Snake Moves Faster; Dragon Appears
- Game Over When Hitting Wall or Dragon

On the Phone:

- Game Dynamics

In the Cloud:

- Dragon Positioning Min-Max AI Engine



Activity Classification

Bin Liu

Activity Classification:

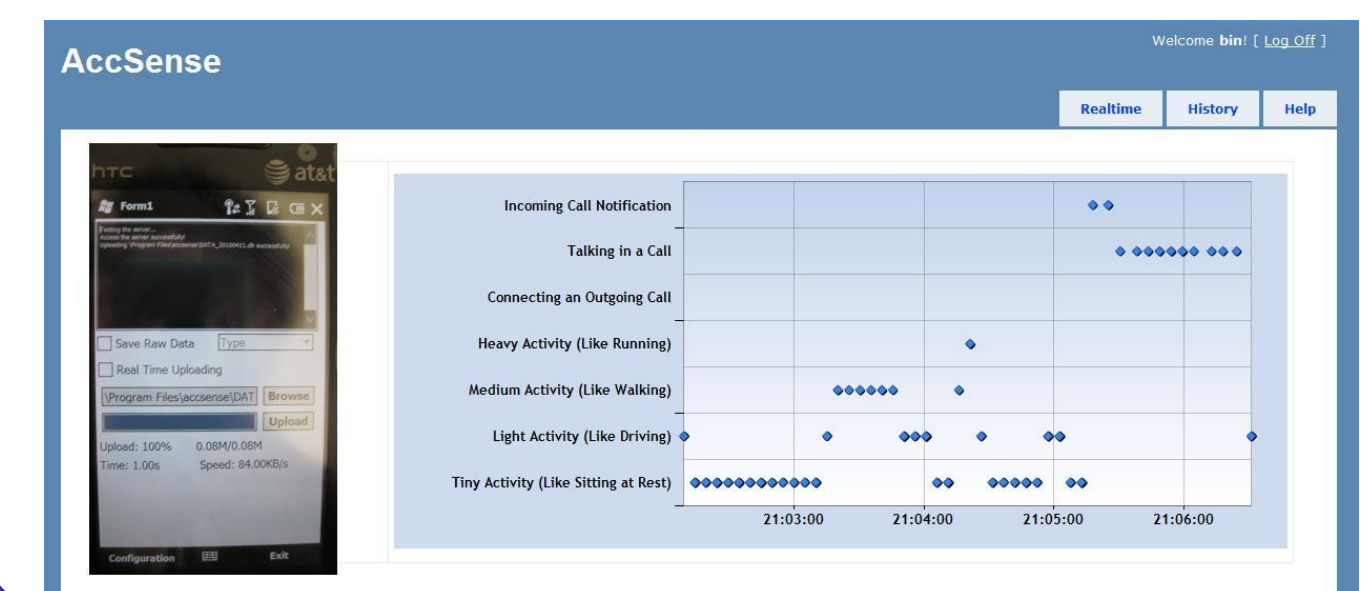
- Accelerometer Based
- Discover Individual Daily Life Patterns
- Share Datasets Within the Cloud
- SVM (Support Vector Machine) AI Engine

On the Phone:

- Collect Acceleration Data & Timestamps
- Framing & Feature Extraction

In the Cloud:

- Data Classification
- Offline Processing / Model Training



Adventure Game

Weiwei Chen, Shuo Zhao

Platform for Adventure Games:

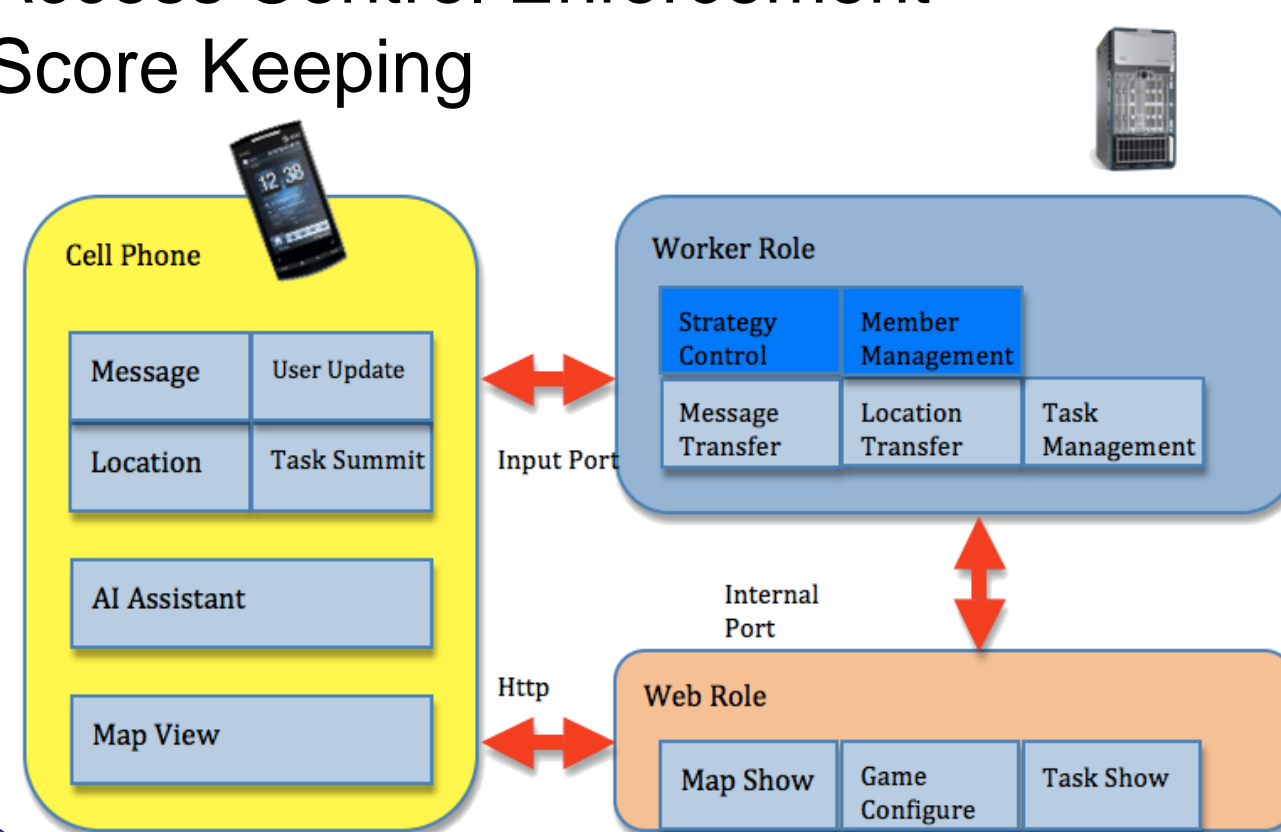
- Treasure Hunt; Hiking; Paintball

On the Phone:

- Location & Map Service
- User Management: Roles & Groups
- AI Tools

In the Cloud:

- Game Specific Message Routing
- Access Control Enforcement
- Score Keeping



Bomb On Your Lawn

Kai Song, Chengjie Zhang

Location-based Multiplayer Mobile Game:

- Bomber Places "Bomb" at Geo-location
- Other Players Must Find It in Time

On the Phone:

- GPS Data Acquisition
- User Interface

In the Cloud:

- Game State
- Score Keeping

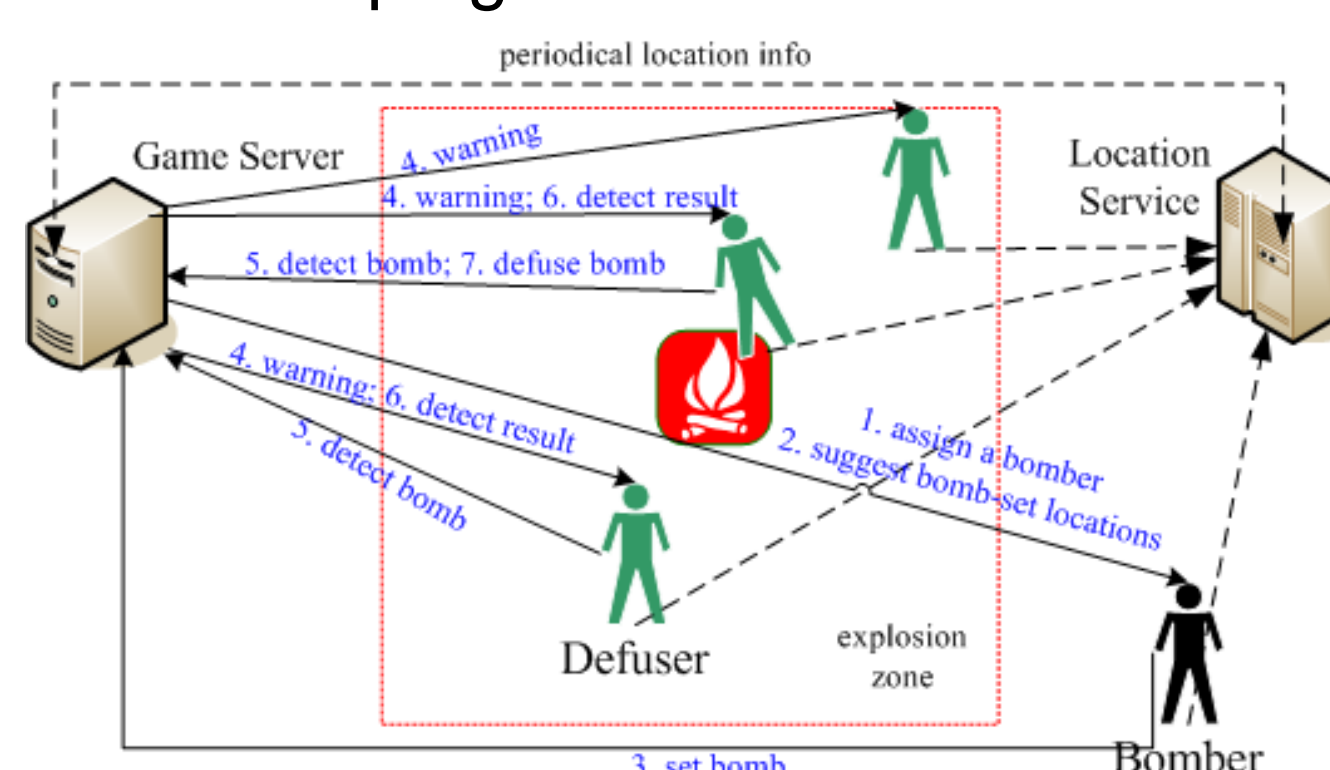
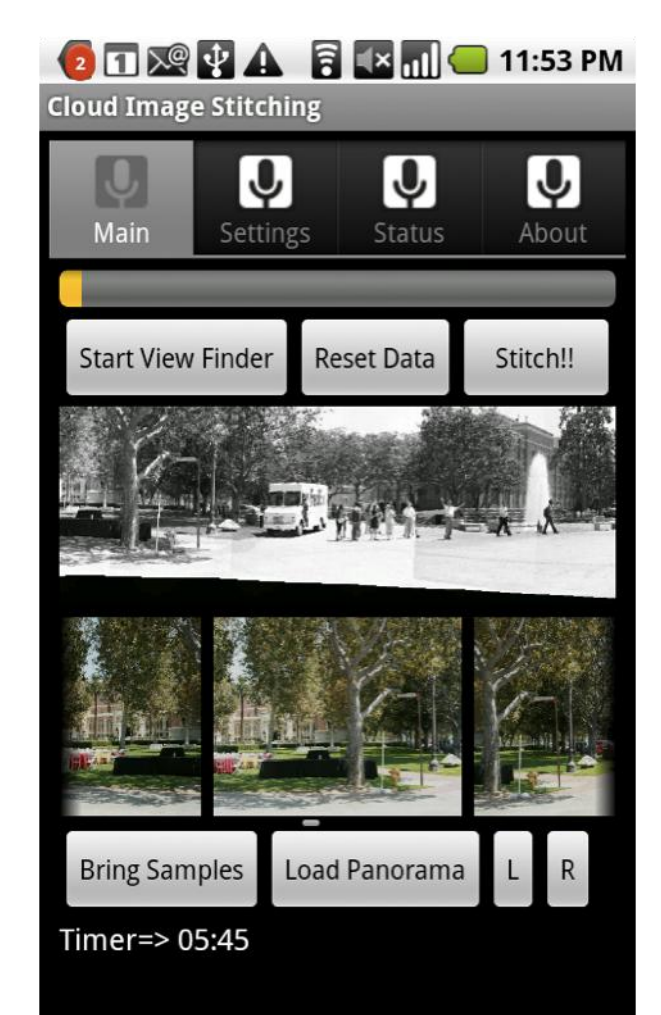


Image Stitching

Moo-Ryong Ra

Automatic Image Stitching:

- Multi-Step Process:
 - SIFT
 - Feature Extraction
 - Feature Matching
 - Homography Estimation
 - Camera Pose Estimation
 - Image Warping
- Each Step Can Run on Phone or in Cloud
- Three Strategies:
 - Cloud-only
 - Local-only
 - Static-partitioning



Parking Assistant

Gaurav Sanghavi, Nirmal Desai

Crowd-Sourced Parking:

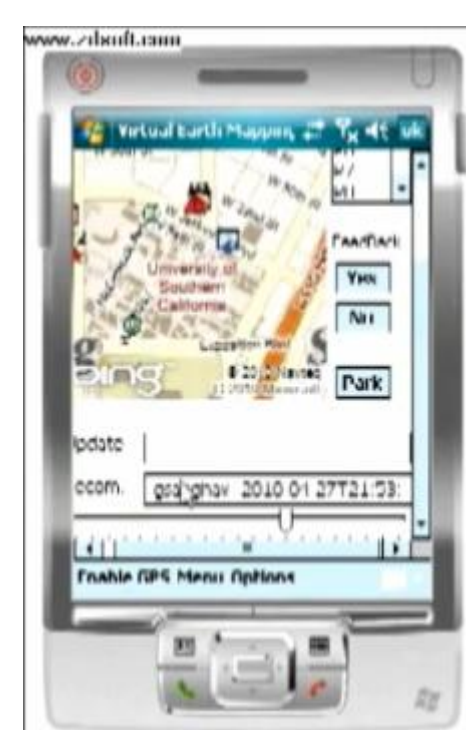
- Driven by Social Networking
- Users Rank Lots:
 - Parking Availability
 - Cost
 - Convenience
- System Finds Available Spots Close to User

On the Phone:

- Location Tracking
- User Interface

In the Cloud:

- System State
- Space Ranking Algorithm



SensD

Anupama Mann, Sagar Kapare

Social Networking Mobile App:

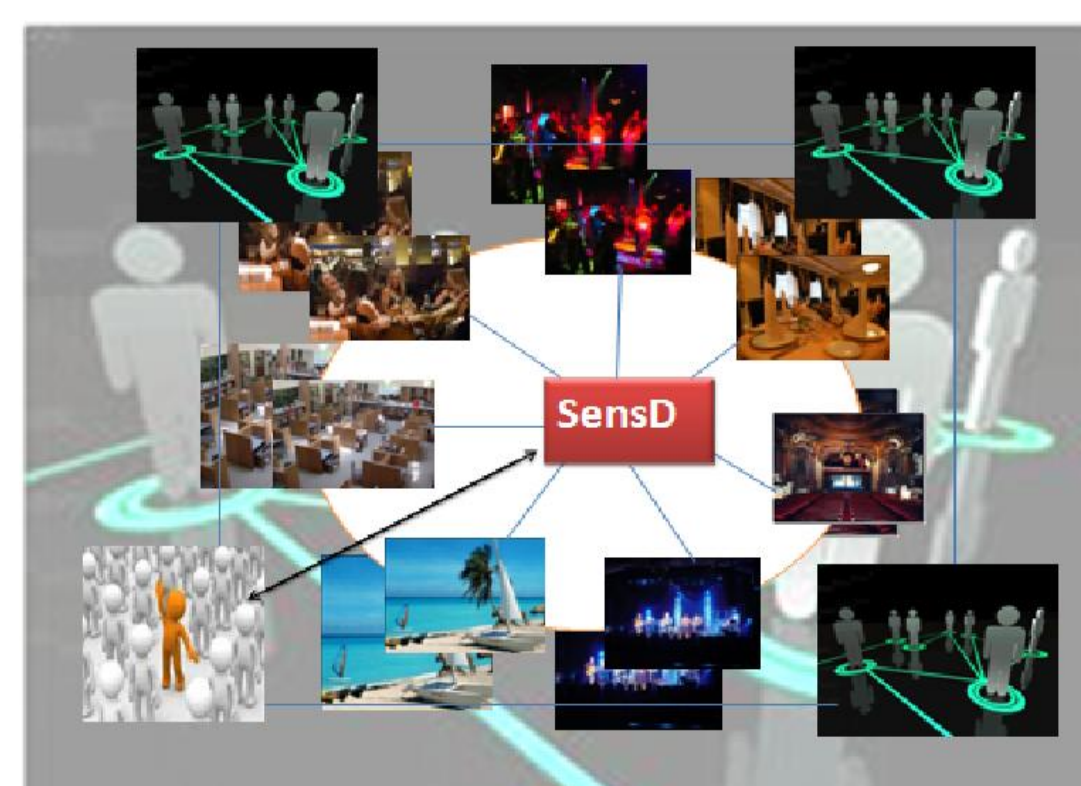
- Find Friends in Real-time
- Make Friends with People Around You
- Let Others Know What You Are Doing

On the Phone:

- Location Tracking
- User Interface

In the Cloud:

- Data Storage & Management



Smart Bike Pedometer

Bo-Chun Wang

Smart Bike Pedometer:

- GPS & Accelerometer Based
- Real-time Information: Burned Calories; Elapsed Time; Distance; Speed

On the Phone:

- Data Acquisition
- User Interface

In the Cloud:

- Record Keeping
- Route Sharing
- Road Information Datasets
- Route Condition Inference Engine

