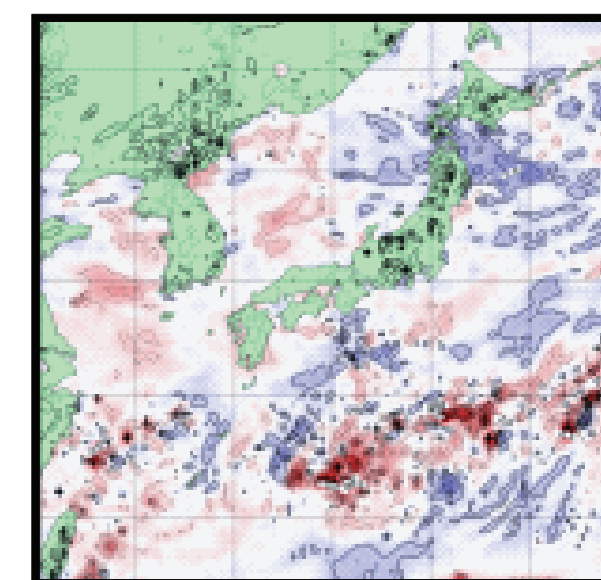# Division of Computational Informatics
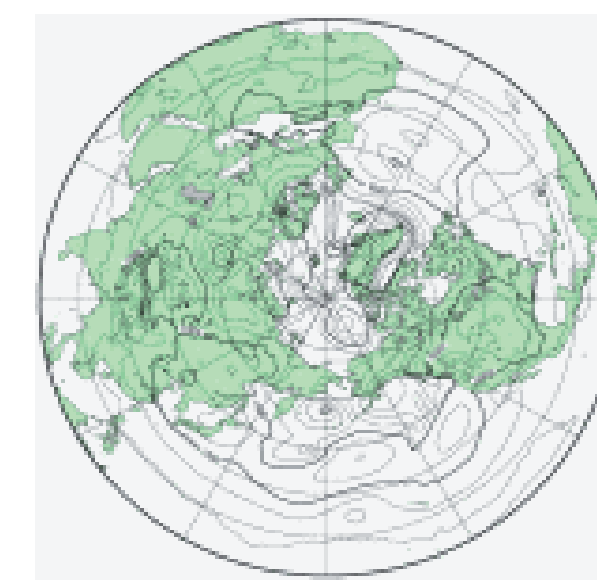## Computational Intelligence / Computational Media

## Meteorological DB Archive

Center for Computational Sciences (CCS), University of Tsukuba offers the daily operational weather forecasting data provided by the Japan Meteorological Agency (JMA). The data are called Grid Point Values (GPV). The Archive is maintained for the purpose of scientific development of the weather and climate forecasting technology. All weather maps posted here are the product by the CCS. In the Archive, there are six kinds of JMA/GPV data. More than 170 users register and data size is about 1 TB.

Meso-scale
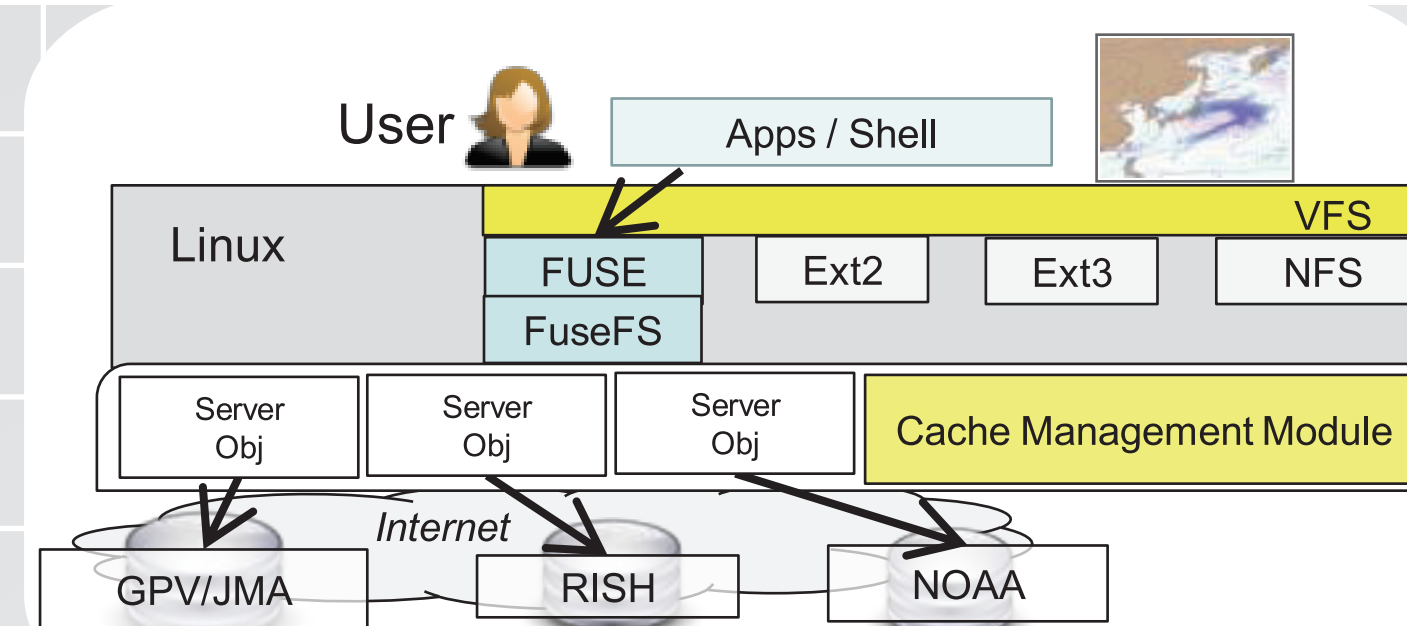Non-hydrostatic Model

Global Spectral Model

## Meteorological Data Integration

Supporting scientists to access online meteorological data
- Using FUSE for allowing users / applications to access online meteorological data as local files.
    * FUSE: A Linux kernel module for user-level file system.
- Intelligent prefetch and cache management for efficiency.

User — Apps / Shell
Linux — VFS
FUSE  Ext2  Ext3  NFS
FuseFS
Server Obj  Server Obj  Server Obj  Cache Management Module
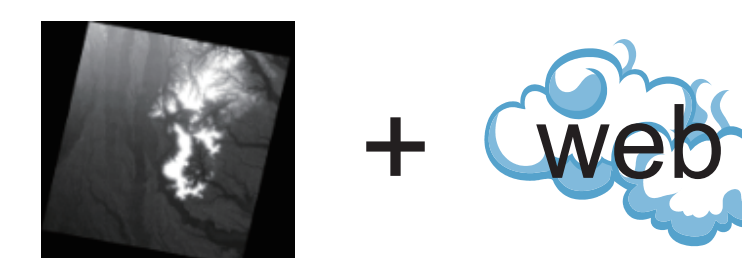Internet
GPV/JMA  RISH  NOAA

## Automatic Classification of Weather Patterns

Japanese pressure patterns are classified into 15 patterns. When a meteorology researcher needs the data of a specific pressure pattern, he/she has to see huge data by their own eyes. We have developed an automatic classification system with support vector machine, which showed 0.869 F-measure.

Other Patterns → SVM Classifier → Low West  High East

## Integration of Satellite Images and Web Contents

The GEO Grid project has collected satellite observation images from 2000 to present, and the amount of the collection is about 150 TB. We have developed a system that integrates web contents about newly constructed buildings and their satellite images.
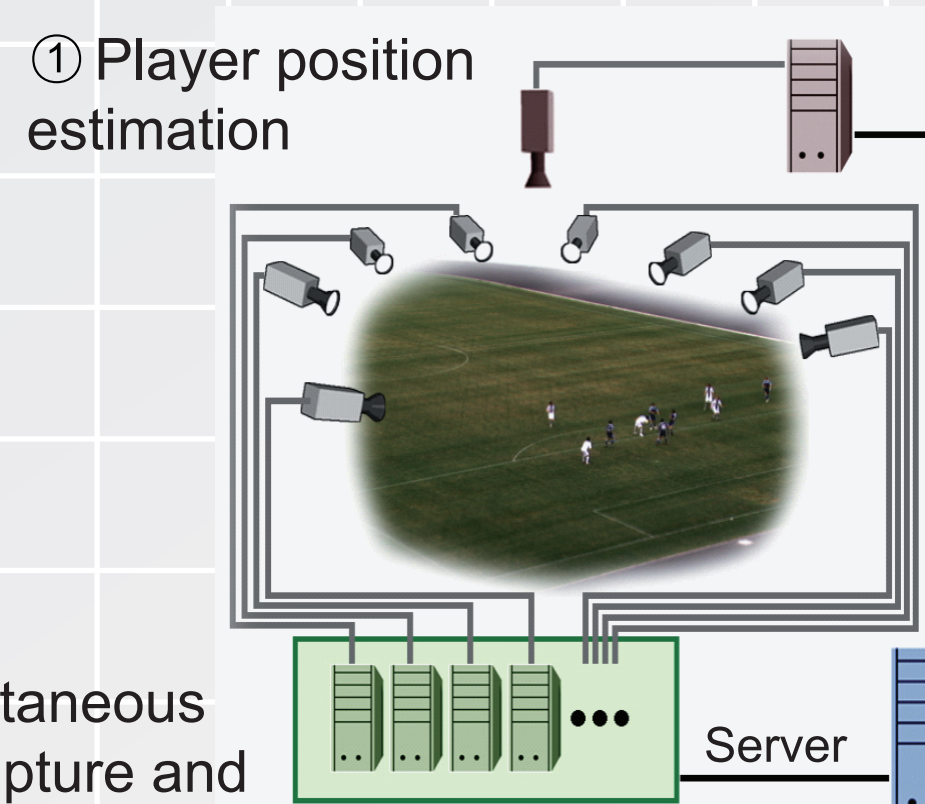
＋ web

Contact: {kitagawa, amagasa, kawasima}@cs.tsukuba.ac.jp

## Free Viewpoint Watching of Live Soccer Games

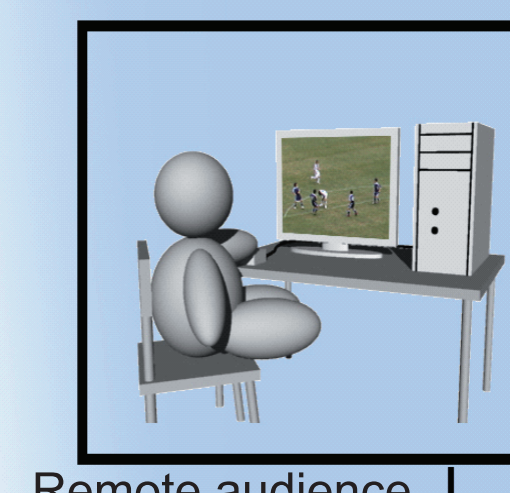Multiple viewers over computer network can browse a live soccer game from 3D free viewpoints.

① Player position estimation

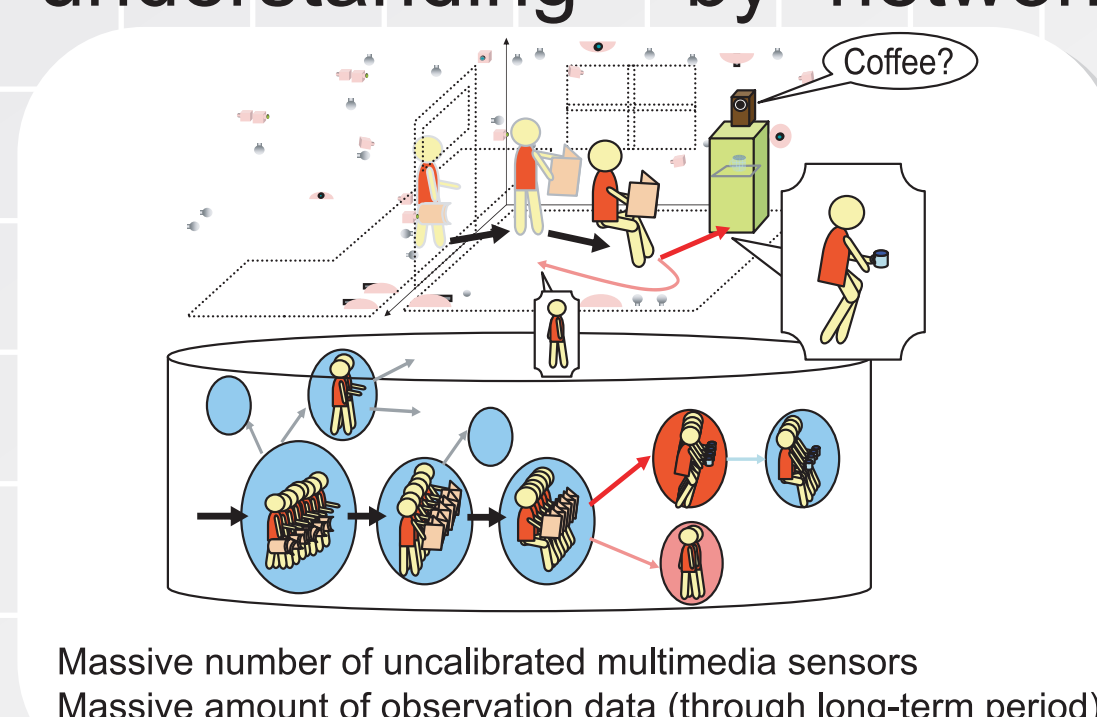② Simultaneous video capture and image analysis

Server

③ Virtualized players are stored and forwarded to a 3D virtual stadium at user side.

Remote audience

④ Viewer can fly through the field and enjoy any viewpoints on-line by our 3D live video technique.
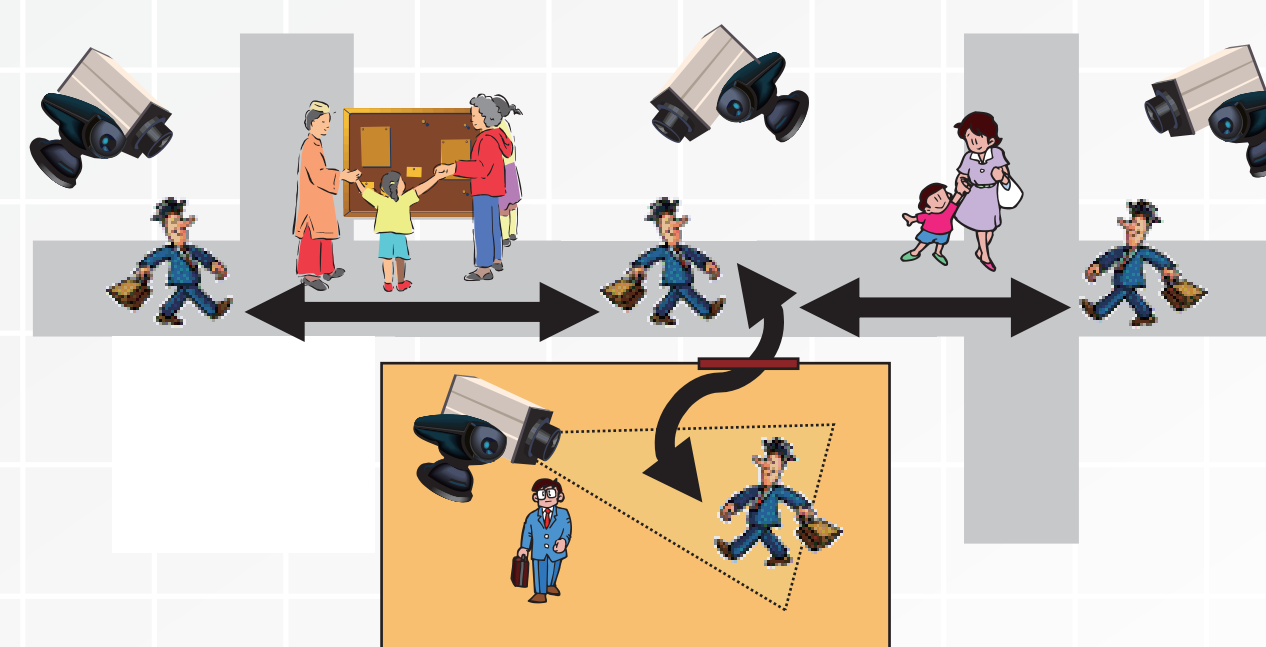
## Massive Sending

Intelligent video processing and human behavior understanding by networked sensors.

Coffee?

Massive number of uncalibrated multimedia sensors
Massive amount of observation data (through long-term period)

## Sensing Web

Sensing Web is a framework for everyone to freely utilize the sensory information of ubiquitous sensor networks.

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