VIGILANCE
Verified InvestiGatIve Lifestyle ANalysis and Coordination Environment

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Motivation

• Human behavior and activities significantly impact Diabetes patient outcomes significantly
• Unchecked fluctuations in insulin levels can lead to
  – Medical complications across the body’s systems
    • Vision, hearing, nervous, skin, cardiovascular
    • Death
  – Preventable burden on patients and medical profession
  – Preventable cost (~billions of dollars annually)

• **Goal of our work:** To pursue new research for secure and *customizable lifestyle tracking and analysis*
VIGILANCE: Verified Investigative Lifestyle Analysis and Coordination Environment

- An advanced software system that
  - Securely collects this data from the devices in our lives
  - Provides automatic analysis, alerts, reminders in real time
  - Allows sharing of data and alerts with doctors, care takers, and family
  - Allows sharing of *anonymized* data with medical professionals
    - Combined with data of others: crowd sourcing for lifestyle analysis
    - Easy analytics and visualization tools to analyze multi-patient data

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VIGILANCE

- Secure and easy to use by patients of all ages
  - Integrating transparently into their lives and with personal technologies

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Proposed Research Goals

A novel, unified software system that provides

• Secure collection and storage of patient data, including patient vital signs, blood glucose levels, daily activities, etc., from a variety of personal devices, GPS/iBeacons

• Automatic data analysis and personal notifications (alerts, reminders, encouragement, and healthy suggestions),

• Controlled sharing of Vigilance data with authorized physicians and care providers, and

• Large-scale analysis visualization of anonymous multi-patient data (collected by Vigilance tracking) that help diabetes researchers and doctors discover opportunities for combating the disease quickly.
Vigilance Research Agenda

• Coordinated data ingress from disparate, independent measurement and tracking sources, i.e. Personal Cloud advances,

• Secure and controlled data transmission, storage, and sharing, and

• Scalable and collaborative data-analytic cloud computing, via new hybrid cloud, cloud platform, and cloud infrastructure

We plan for Vigilance to be easy to use by patients of all ages and to integrate transparently into their lives and personal technologies (smart phones, tablets, home computers, etc.).