Augmented Personalized Health: Using Semantically Integrated Multimodal Data for Patient Empowered Health Management Strategies

Amit P. Sheth
Wright State University - Main Campus, amit@sc.edu

Hong Y. Yip
Wright State University - Main Campus

Utkarshani Jaimini
Wright State University - Main Campus

Dipesh Kadariya
Wright State University - Main Campus

Vaikunth Sridharan
Wright State University - Main Campus

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Amit Seth1, Hong Yung Yip1, Utkarshani Jaimini1, Dipesh Kadariya1, Vaikunth Sridharan1, Revathy Venkataramanan1, Tanvi Banerjee2, Krishnaprasad Thirunarayanan1, Maninder Kalra2

1Ohio Center of Excellence in Knowledge-enabled Computing (Kno.e.sis), Wright State University, Dayton, OH, USA
2Dayton Children’s Hospital, Dayton, OH

[Image of poster with details]

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**Augmented Personalised Health (APH)** is a vision to enhance the healthcare by using Artificial Intelligence (AI) techniques on semantically integrated Patient Generated Health Data (PGHD), environmental data, clinical data, public health data and social data.

**Rationale**

As we know it, the healthcare system is in the process of going through a massive change from:

- **Episodic to continuous**
- **Disease-focused to wellness and quality of life focused**
- **Clinician-centric to anywhere a patient is**
- **Clinician controlled to patient empowered**
- **Being driven by limited data to 360-degree, multimodal personal-public-population specific, health and wellness**

**Augmented Personalized Health**

While the ability to create and capture data is already here, the upcoming innovations will be in physical-cyber-social big data-driven. Being driven by Clinician controlled Disease-focused Episodic to Systolic blood pressure Elevated Blood Pressure Hyper tension.

**Current APH Applications**

- **(a) Evaluation Ongoing:** Pediatric Asthma, Bariatric Surgery, [Dementia - Caregivers]
- **(b) Preliminary:** ADHF, Liver Cirrhosis

**5 Strategies of Augmented Personalized Health for Better Disease Management and Patient’s Well-Being**

1. **Self Monitoring**
   - Contextualized Personalization of disease state and data collected with respect to disease.
   - Provides timely actionable information specific to patient disease.

2. **Self Appraisal**
   - Contextualized Personalization of disease state and data collected with respect to disease.
   - Provides timely actionable information specific to patient disease.

3. **Self Management**
   - Enacts on the action-related information.
   - Generates predictions or recommended course of action.

4. **Disease Prognosis and Tracking**
   - Enhances the data collection and analysis. To optimize patient’s health over the time.

**Chatbots for Healthcare**

- **Contextualization:** Refers to data interpretation in terms of knowledge (context).
- **Personalization:** Refers to future course of action by taking into account the contextual factors such as user’s health history, physical characteristics, environmental factors, activity, and lifestyle.
- **Abstraction:** Computational technique that maps and associates raw data to action-related information.

**AUGMENTED PERSONALIZED HEALTH**

**Augmented Personalised Health: Using Semantically Integrated Multimodal Data for Patient Empowered Health Management Strategies**

**Smart Data**

- Meaningful data obtained after contextualized processing

**Data Components**

- PGHD, Clinical Data, Environmental Data and Social Data

**Turning Big Data into Insights into Actionable Information**

**AUGMENTED PERSONALIZED HEALTH**

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**Putting it all together:** Example chatbot conversation which utilizes background health knowledge graph and patient’s knowledge graph to infer and generate recommendation to patients.