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## DYNAMIC FUNCTIONAL CONNECTIVITY BASED CLASSIFICATION OF PARTICIPANTS FROM FUNCTIONAL MRI DATA

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A dynamic sliding-window-based method, named dynamic functional connectivity (DFC), which assesses temporal dynamics of functional connectivity among different brain networks, was recently developed and it has gained attention (Sakoglu et al, MAGMA Journal, 2010). DFC provides more information than the static FC method and DFC-based features can lead to better classification of brain diseases or conditions when compared with static FC-based features. The method can be applied to FMRI time courses of a voxel or a region-of-interest, as well as it can be combined with powerful data-driven techniques such as independent component analysis (ICA). In this talk, analysis and classification results from FMRI data on addiction, based on DFC features, will be presented.

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## A CLINICAL DECISION SUPPORT PLATFORM BASED ON ONTOLOGIES AND CASE-BASED REASONING FOR ANTIBIOTICS PRESCRIPTION IMPLEMENTED BY A MULTI-AGENT SYSTEM

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This study describes the construction and optimizes the sensitivity specificity of a decision support (DS) platform for identifying a potential infectious disease, according to a patient's self-description of their disease state. A pilot domain ontology was constructed that pertain to clinical stages and their corresponding information components. The DS platform cooperates with ontology to use an estimate of the likelihood of achieving maximum benefit in each disease case to form empirical therapy recommendations and data on the sensitivity of the disease organism to antibiotics. If the disease severity is not too high, the DS platform screens for an appropriate therapy and proposes an antibiotic therapy specifically adapted to the patient, taking into account the indications, contraindications, side-effects, drug-drug interactions between proposed therapy and already prescribed medication and the route of administration of the therapy. Aiming to avoid drug-use risks as much as possible and screening for some antibiotic application protocols that are not in accordance with current medical theory, the DS platform uses case-based reasoning (CBR) to search for similar medical cases within the database and presents the references to the patient as justifiable evidence. The proposed DS platform supports NLP queries. Patients can obtain therapy suggestions by inquiring about a current clinical case. By combining a DS platform based on the therapeutic knowledge base, a diagnostic model of infectious disease, and a CBR approach via subtractive design, and also avoiding drug-use risks as much as possible, categorization of possible infectious disease diagnoses are suggested.

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