EuroSciCon

DAY 1

Keynote Forum

9th Edition of International Conference on

Mass Spectrometry

March 04-05, 2019 | Berlin, Germany

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Mahmoud Abdel Wahed Rafea, Int J Drug Dev & Res 2019, Volume 11
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Mass spectrometry: Clinical artificial intelligence application

Mahmoud Abdel Wahed Rafea

Zrythra, USA

Background: Erythrocytes Dynamic Antigens Store (EDAS) is a new discovery. EDAS consists of self-antigens and foreign (non-self) antigens. In patients with infectious diseases or malignancies, antigens of infection microorganism or malignant tumor exist in EDAS.

Objective: Storing EDAS of normal individuals and patients in a database has, at least, two benefits. First, EDAS can be mined to determine biomarkers representing diseases which can enable researchers to develop a new line of laboratory diagnostic tests and vaccines. Second, EDAS can be queried directly, to reach a precise diagnosis without need to do many laboratory tests. The target is to find the minimum set of proteins that can be used as biomarkers for a particular disease.

Methods: A hypothetical EDAS is created. Hundred-thousand records are randomly generated. The mathematical model of hypothetical EDAS together with the proposed techniques for biomarker discovery and direct diagnosis are described. Experiments by generating case possibilities are conducted.

Results: Biomarkers proteins are identified for pathogens and malignancies, which can be used to diagnose conditions that are difficult to diagnose.

Conclusions: The presented tool can be used in clinical laboratories to diagnose disease disorders.

Biography

Mahmoud Abdel Wahed Rafea completed his Graduation from the Faculty of Medicine at Cairo University in 1975. He completed his MSc in Clinical Pathology and Chemistry in 1980. He started studying computer science while working as a clinical pathologist in 1984. He joined ARC (Agriculture Research Center) in 1992. He got his PhD in Artificial Intelligence from Cairo University. He worked as a Senior Researcher in SICS (Swedish Institute of Computer Science) from 2000-2002. He was promoted by ARC as a Full Professor in Computer Science, 2006. In 2009 and 2010 he worked as a visiting Professor in Karolinska, Sweden. He discovered that erythrocytes have a dynamic antigens store. In 2015, he established the Erythrocytes Research Unit (ERU) under ARC. He incorporated Erythra Corporation in 2018.

mahmoudrafea@erythra.com

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Petra Perner, Int J Drug Dev & Res 2019, Volume 11
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A novel method for the interpretation of spectrometer signals based on delta-modulation and similarity determination

Petra Perner

Institute of Computer Vision and Applied Computer Sciences IBaI, Germany

For the application of mass spectrometry in different areas the automatic intelligent spectrometer signal analysis methods are necessary. These methods should be robust and machine learnable automatic signal interpretation methods. These methods should be taken into account that not so much spectrometer data about the application are available from scratch and that these data need to be learnt while using the spectrometer system. We propose to represent the spectrometer signal by a sequence of 0/1 characters obtained from a specific delta modulator. This prevents us from a particular symbolic description of peaks and background. The interpretation of the spectrometer signal is done by searching for a similar signal in a constantly increasing data base. The comparison between the two sequences is done based on a syntactic similarity measure. We describe in this paper how the signal representation is obtained by delta modulation, the similarity measure for the comparison of the signals and give results for searching the data base.

Biography

Petra Perner is the Director of the Institute of Computer Vision and Applied Computer Sciences IBaI. (IAPR Fellow) She received her Diploma Degree in Electrical Engineering and her PhD Degree in Computer Science for the work on Data Reduction Methods for Industrial Robots with Direct Teach-in-Programing. Her habilitation thesis was about *"A Methodology for the Development of Knowledge-Based Image-Interpretation Systems"*. She has been the Principal Investigator of various national and international research projects. She received several research awards for her research work and has been awarded with three business awards for her work on bringing intelligent image interpretation methods and data mining methods into business. Her research interest is image analysis and interpretation, machine learning, data mining, big data, machine learning, image mining and case-based reasoning.

pperner@ibai-institut.de