

Rhön-Klinikum Hospitals to Study How IBM Watson Can Support Doctors in the Diagnosis of Rare Diseases

Cognitive assistant is planned to support physicians to help improve time to treatment for hundreds of patients annually

Zürich, Switzerland / Bad Neustadt, Germany - 18 Oct 2016: Today, RHÖN-KLINIKUM AG (RKA), a private hospital group in Germany, has announced, that by the end of the year, it will begin piloting a Watson-powered cognitive assistance system to help support physicians at the group's Centre for Undiagnosed and Rare Diseases located at the University Hospital Marburg.

Since it opened in 2013, the renowned Centre has been contacted by more than 6,000 patients to visit Prof. Dr. Jürgen Schäfer, a leading expert in rare diseases, who is also known as the "German Dr. House," based on the character of the eponymous American medical television drama. Most of the patients he and his team meets with have year-long medical histories, which include a large amount of unstructured data, such as laboratory tests, clinical reports, drug prescriptions, radiology findings as well as pathology reports.

"It's not uncommon for our patients to have thousands of medical documents, leaving us overwhelmed, not only by the large number of patients, but also by the huge amount of data to be reviewed," said Prof. Dr. Jürgen Schäfer, University Hospital Marburg. "This is especially challenging because our work is often like searching for the proverbial needle in the haystack -- even the smallest piece of information could lead to an accurate diagnosis."

Currently, when the Centre's expert physicians meet patients for the first time, they conduct a thorough diagnosis by speaking with the patients and carefully studying their medical history. This is augmented by their own knowledge and experiences, medical journals, online websites and expert tools – a process, which can take several days for each patient.

Pilot phase at the "Centre for Undiagnosed and Rare Diseases"

RKA has teamed up with IBM for a 12-month pilot project where medical and technical scientists and designers from both companies are working together to develop a cognitive assistance system for rare diseases. Its overall goal is to support physicians to analyze patient data to help them make decisions more quickly and safely.

“The amount of medical knowledge continues to explode to the point where it will double every 73 days by the year 2020. Therefore, the planned use of cognitive technology such as IBM Watson is intended to support our evidence-based and individually optimized treatment for each patient,” said Prof. Dr. Bernd Griewing, Chief Medical Officer, RHÖN-KLINIKUM AG. “We are developing an assistance system to facilitate the preparation and evaluation of existing patient information before and during a consultation with physicians. This will help our doctors reach diagnostic decisions and select appropriate treatment options.”

Once the pilot begins, patients will fill out a digital questionnaire developed by the medical staff in Marburg. This questionnaire will anonymize the data and send it to Watson’s APIs in the IBM Cloud, where the relevant information will be extracted for the physicians.

As the patient information will be provided in German, the cognitive assistant will use a natural language processing algorithm for medical terminology developed by IBM Global Business Services (GBS) to correlate the German questionnaire to the corpus of English-based medical data to provide a differential diagnosis.

“Using cognitive computing, we are building a list of hypotheses, including their sources, which we then present to the doctors for an ultimate data-driven diagnosis,” said Dr. Matthias Reumann, healthcare scientist and technical leader of the project, IBM Research. “If one lab result is slightly outside of the normal range, Watson may flag it for further investigation.”

RKA is providing the required specialist information and medical knowledge as well as the IT system for the project and is accountable for data protection regulations.

Vision of RHÖN-KLINIKUM AG for an optimized patient management

The insight obtained from the project phase at the University Hospital will subsequently be analyzed and used across other hospitals of the group. The system is expected not only to help physicians find a diagnosis, but also to support the process of patient admission and provide the best possible patient routing. This will prevent cost- and time-intensive misdirection of patients to the wrong specialists or treatment plans.

“Optimized patient management is crucial for both the nationwide medical treatment of tomorrow and the further development of our company. In this context, digital solutions are becoming increasingly decisive,” said Jens-Peter Neumann, Chief Financial Officer, RHÖN-KLINIKUM AG. “Our cooperation with IBM is an important part of our innovation strategy. In addition, we are focused on identifying and collaborating with startups in the IT-driven healthcare sector to strengthen our unique market position. Both medical and technical efforts and improvements will serve our patients and create value for our company.”

Watch this video of the teams from Rhön-Klinikum and IBM: <https://youtu.be/MX7yUIj5-a0>

Photos are available here: https://www.flickr.com/gp/ibm_research_zurich/86G7y8

About the RHÖN-KLINIKUM AG

RHÖN-KLINIKUM AG is one of the largest healthcare providers in Germany. At five medical sites with a total of 5,300 beds we offer cutting-edge medical care with a direct link to universities and research institutes. Our top five key areas of treatment are cardiological and coronary disease, neurological disorders, oncology, lung diseases as well as orthopedic and accident surgery. A total of over 15,000 employees work for RHÖN-KLINIKUM AG. Our facilities are located in Bad Berka, Bad Neustadt/Saale, Frankfurt (Oder) and Giessen and Marburg. Further information is available at: www.rhoen-klinikum-ag.com/

About IBM Watson: Pioneering a New Era of Computing

Watson represents a new era in computing called cognitive computing, where systems understand the world the way more similar to humans: through senses, learning, and experience. Watson continuously learns from previous interactions, gaining in value and knowledge over time. With Watson, organizations are harnessing the power of cognitive computing to transform industries, help professionals do their jobs better, and solve important challenges. Watson solutions are being built, used and deployed in more than 45 countries and across 20 different industries. Watson is open to the world, allowing a growing community of developers, students, entrepreneurs and tech enthusiasts to easily tap into the most advanced and diverse cognitive computing platform available today.

For more information on IBM Watson, visit: ibm.com/Watson and ibm.com/press/watson. Join the conversation at [#ibmwatson](https://twitter.com/ibmwatson).

About IBM Research

For more than seven decades, IBM Research has defined the future of information technology with more than 3,000 researchers in 12 labs located across six continents. Scientists from IBM Research have produced six Nobel Laureates, 10 U.S. National Medals of Technology, five U.S. National Medals of Science, six Turing Awards, 19 inductees in the National Academy of Sciences and 20 inductees into the U.S. National Inventors Hall of Fame. For more information about IBM Research, visit www.ibm.com/research.

<https://uk.newsroom.ibm.com/2016-Oct-18-Rhon-Klinikum-Hospitals-to-Study-How-IBM-Watson-Can-Support-Doctors-in-the-Diagnosis-of-Rare-Diseases>