What's next

Healthcare

Inference Analytics Advanced Neural Network generates impressions based on radiologist findings

The Inference Analytics Neural Network (IANN) Auto-Impression Assistant uses deep learning algorithms to understand unstructured text contained in healthcare records. More powerful than traditional NLP, IANN automatically generates text impressions based on the radiologist's findings and patient's history. By integrating seamlessly into the PowerScribe One reporting platform, users can improve efficiency and accuracy, reducing radiologist workload and stress and helping combat burnout. The Auto-Impression Assistant is available through the Nuance AI Marketplace and PowerShare Network, which connects more than 8,000 facilities in the U.S.

Jonathon Dreyer
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In radiology, a lot of attention has been focused on pixel-based solutions that analyze images to detect possible abnormalities, take measurements, and assess multiple parameters, such as tissue density and functionality. Inference Analytics is unique as it offers a non-pixel solution that applies deep learning-based Natural Language Processing (NLP) to unlock valuable clinical information trapped in unstructured text narratives. By taking information already captured in the patient history and combining it with the findings dictated by the radiologist, Inference Analytics Neural Network (IANN) mimics the human brain's understanding of language to extract critical insights, interpret information, and automatically generate impressions that are seamlessly incorporated into the PowerScribe radiology report.

Founder and CEO of Inference Analytics Inc., Farrukh Khan, shares his perspectives on their AI journey and the impact of their pioneering AI solutions for radiologists and the reporting process.

Jonathon Dreyer: *Tell us about your business   when and how you started and your development journey.*

FK: Our original goal was to build a predictive analytics company, but after starting the company we found that most of the clients and prospects we talked to were asking for help with unstructured data. We were drawn to healthcare because the most valuable and essential unstructured data is in healthcare systems and current technologies have not produced

satisfactory results. Hence, we set out to build a next-generation system that could understand unstructured healthcare data in ways that had not been done before, using deep learning and AI-based approaches. We've been working on text-based AI models for the last two and a half years. One of our first steps was to partner with leading radiologists from University of Chicago Medicine to understand the problems that needed to be addressed in radiology. We developed a deep learning platform with a unique contextual infrastructure to solve complex use cases involving healthcare text. This platform is what we call IANN.

JD: *What AI solutions do you have and what do they do?*

FK: The IANN Auto-Impression Assistant is the first non-pixel-based AI solution (i.e., an AI solution that uses AI to process text instead of images), available on the Nuance AI Marketplace and offers seamless, real-time integration with Nuance's PowerScribe One platform. IANN is a next-generation, text-based AI system geared towards improving physician productivity and reducing communication errors that impact care delivery. IANN was trained by leveraging several million radiology reports from premier academic hospitals in the United States, and our initial positive results were presented at RSNA 2019.

Due to a radiologist's large workload and increasing daily case volume, auto-generating the impression text and integrating results directly into the PowerScribe report enables radiologists to complete their cases faster. The IANN report assistant provides an extra review and suggestion for radiologists to serve as a "second set of eyes" to aid in documentation and improve report quality.

Over the next few months, we will have leading radiologists participate in beta testing the Auto-Impression Assistant, preparing the platform for general availability in early 2021.

JD: *What s the big Aha moment when you first show users what your AI application(s) can do for them?*

FK: IANN generates impressions very accurately and is very similar to what a radiologist would conclude.

JD: *What challenges or needs did you see that drove you to focus on this?*

FK: Since radiologists are often expected to read and document more than one hundred cases in a single day, we felt driven to create a technology that could help reduce the chances of burnout, fatigue, and errors to deliver a significant impact on report quality and patient care.

JD: *What s the number one benefit you offer?*

FK: It's a benefit triad—saving time in creating radiology reports, reducing burnout, and reducing errors. Our beta program that just launched is meant to be our solution's first usage in a wholly integrated setting. We look forward to collecting feedback and real-life insights to highlight core benefits and quantify the impact our solution will have on radiologists.

JD: *Are there any stories you can share about how your AI solutions drove measurable patient care outcomes?*

FK: Our auto-impressions show greater than 90% concordance with radiologist-generated impressions based on our 2019 RSNA presentation findings.

JD: *What benefits does Nuance and its AI Marketplace for Diagnostic Imaging, bring to your users? What problems does the marketplace and integration into Nuance s workflow solve?*

FK: Since the majority of radiologists in the U.S. use Nuance, integrating with PowerScribe One gives us a platform for distribution, and having a central distribution mechanism makes the process of integration relatively seamless and increases the chances of adoption.

JD: *What has your experience been working with the Nuance team?*

FK: The experience has been excellent in every way. From the technology development teams to the sales, marketing, and product management leaders, we have found the teams to be very professional and like-minded, focusing on our clients' success.

JD: *What is your vision for how your solution(s) will evolve over the next five years?*

FK: We envision that IANN will be seamlessly integrated into radiology workflows across the United States, with continued growth fueled by radiologist recommendations to colleagues and the radiology community at large.

JD: *In one sentence, tell us what you think the future of medicine will look like.*

FK: AI-based models will automate and complement many tasks that impact physicians, making them more efficient and effective in providing care.

Learn more:

To learn more about Inference Analytics, or to sign up to be a beta user, please visit www.inferenceanalytics.com and follow us on LinkedIn or Tumblr

Tags: AI, AI Marketplace, health IT, healthcare, healthcare AI, Healthcare Innovation, Natural Language Processing, Radiology AI

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About Jonathon Dreyer

Jonathon Dreyer is the vice president of solutions marketing for Nuance where he is driving a physician-first approach to medicine by bringing cloud-based speech recognition and clinical language understanding technology to a worldwide community of healthcare IT developers and provider organizations. Prior to his current role, Jon worked as the solutions marketing manager for Diagnostic Imaging at Nuance and previously headed up marketing at Commissure Inc., a provider of clinical documentation and healthcare communication solutions. Jon graduated with Summa Cum Laude honors at Wayne State University where he earned a B.S business administration.

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