INDRAPRASTHA INSTITUTE of INFORMATION TECHNOLOGY DELHI

10 YEARS of EXCELLENCE

Invitation to M.Tech. Thesis Defense of Abhijit Raj: July 30, 2020 (Thursday): 12.00-13.00 IST

In Partial Fulfillment of the Requirements for the Degree of

M.Tech. CB

Abhijit Raj (MT18231)

Will defend his thesis

Title: "**PathoMap: Gene-Organ Relationships A Literature-based Investigation, Visualization & Analysis**"

IIIT-D Faculty and Students are invited

Date: July 30, 2020 (Thursday)
Time: 12.00-13.00 IST
Google Meet link; https://meet.google.com/jcc-bodv-mpk

Examiner:	**Internal:**	**Vibhor Kumar**
	External/Internal:	**Gaurav Ahuja**
	Advisor:	**Debarka Sengupta**

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Abstract

"Genetics has brought huge breakthroughs in understanding human health & well-being, diseases and treatment through modern methods such as personalized medicine. This has been possible through substantial research in the area that reveals how genes are directly linked to our health. As genetic information is passed down in the family, genetic conditions are also hereditary. It is therefore very important to understand the pathogenic role of genes. As new research progresses at a tremendous rate, a lot of insights can also be drawn from the volumes of literature already published by the scientists. Text mining and NLP have become indispensable tools to analyse large amount of textual data such as scientific literature and derive insights from it. Information preserving NLP methods distill from a vast corpus, the relevant pieces of information such as gene-organ relationships, pathogenic role of genes and more.

Ambitious efforts are being made to map the human body at the cellular level to understand variations in cells and how they lead to diseases. In this study, we aim to investigate gene-organ relationships through existing literature. We exploit visualization extensively as a tool to accelerate our understanding of this data. We introduce PathoMap - a novel tool to visualize any organ-related data on the human body. It is the first Python package to plot such organ-specific information. In the context of gene-organ relationships, we use PathoMap to draw conclusions in both healthy and pathological conditions. We hope that our visualization tool, PathoMap will be widely adopted and used in a range of studies to visualize organ-related data."