Vol 04 Edition 4 Oct 2021

Coffee & Code ;

An Initiative by the Department of Computer Engineering

VISION

To be recognized as a department that provides quality technical education and research opportunities that eventually caters to helping and serving the community.

MISSION

- To groom the students to participate in curricular and co-curricular activities by providing efficient resources.
- To motivate the students to solve real world problems to help the society grow.
- To provide a learning ambience to enhance innovations, team spirit and leadership qualities for students.

Prepared by:

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MRS. ANCY ALMEIDA
MR. SRIDHAR IYER
MRS. HEZAL LOPES**

In Association with

CESA

(Computer Engineering Student Association)

## Contents:

Power Seminar on 'HR Conclave'

A Virtual Power seminar on 'HR Conclave – The Future of Human Capital' was arranged for BE and TE students on 18th Sept, 2021 in association with ICT Academy. The Keynote speaker of the session was Mr. Ramit Tyagi, Vice President and Global Hiring Leader at Genpact Digital along with the Panel discussion Guest Speakers.

Campus Director Dr. J. B Patil welcomed the Guests and addressed the students. Mr. K. A. Vijayan, who is Head of Academic Operation and project Implementation from ICT Academy inaugurated the session and addressed the students.

Mr. Rammit Tyagi initiated the session with introduction to the topic 'The future of Human Capital'. He gave brief idea about the central theme of the session to the students. Later the session continued with Panel discussion with Topic 1 : Future of learning in the emerging new normal. Based on the discussion initiated by speakers, students were keen asking questions to the panel. The panel then answering their questions, gave suggestions and guided them regarding the topics.

In the next half, Panel discussion continued with Topic 2 : The Brand You- Understanding the contours of creating a compelling personal brand. Again the speakers initiated the session with introduction to the topic followed by answering the questions asked by students. The speakers made students understand why new skills are important to learn for change in technology. They exposed students to different career's that are worth exploring which will benefit them for getting employed.

The session ended with vote to thanks to all the Guest speakers for giving an opportunity to gain knowledge which will benefit our students in their careers. The seminar gave deep insights into the topic and also revealed some interesting facts.
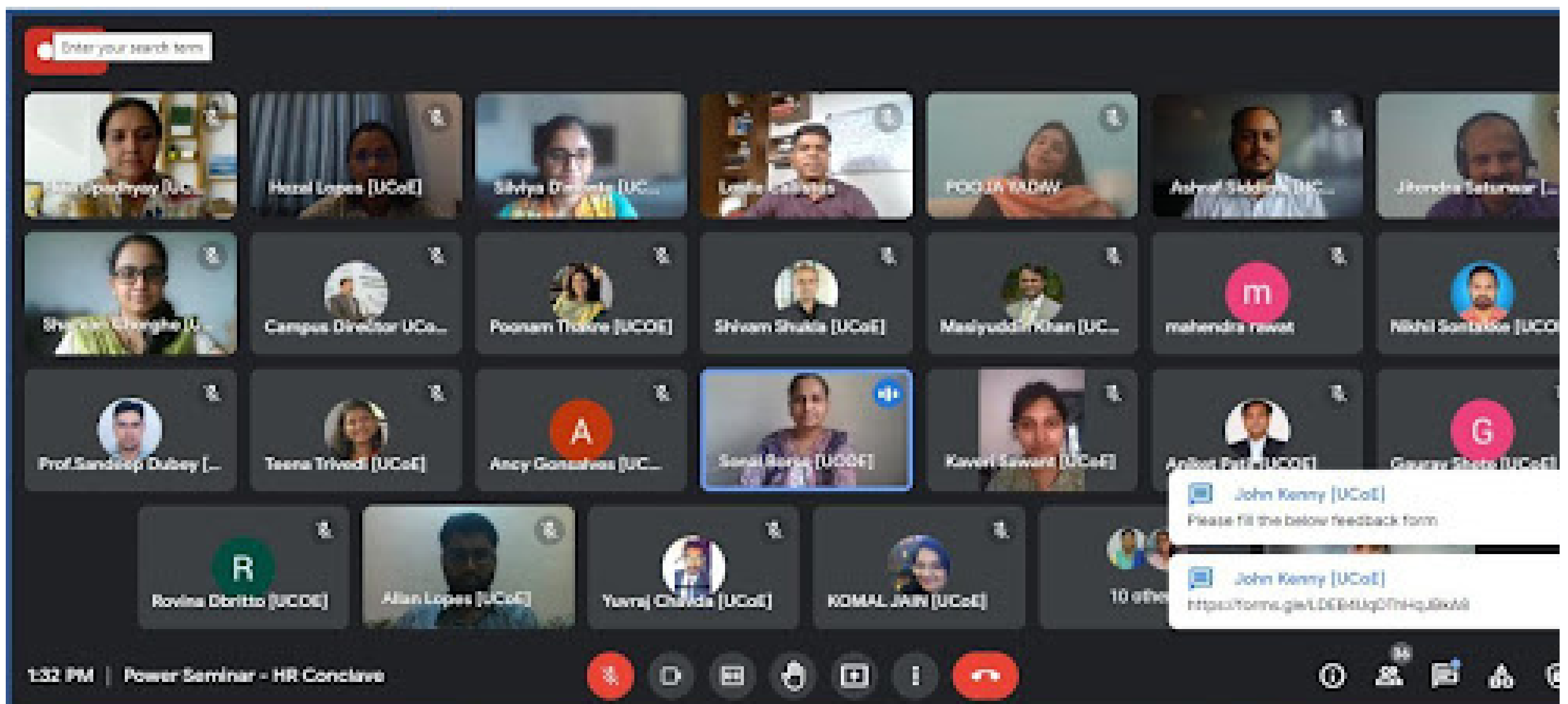
Book Publication

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Mr. Rajat Dungarwal, Mr. Vyom Makwana and Mr. Keyur Babariya, students of BE Computer Engineering along with their project guide Mrs. Vishakha Shelke presented their research paper based on BE project topic "Thing Translator: An Efficient Way to Classify Different Things" on April 29, 2021 at International Conference on Smart Data Intelligence (ICSMDI 2021) organized by Kongunadu College of Engineering and Technology, Trichy, Tamil Nadu, India.

This research was based on developing an image recognition/classification model which converts the image into text and further the text gets converted into speech using TTS engine for all the common citizens to know multiple objects in different languages and also for the young students for e-learning so that the students understand the pronunciation of that word better without any internet connection. We algorithm was developed using Convolutional Neural Network (CNN) and the system of Thing Translator is a mobile app developed for Android phones. The attained accuracy for the model was around 85%.
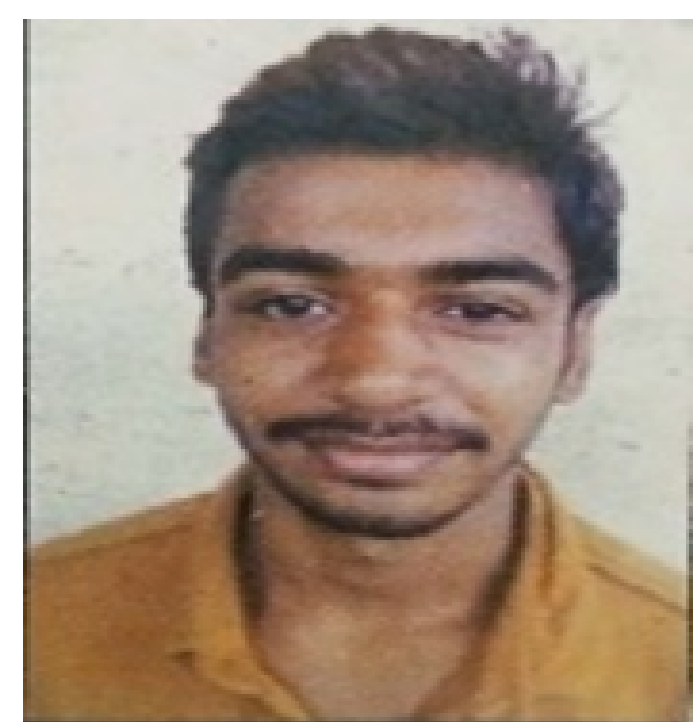
Their Book entitled, " Thing Translator: An Efficient Way to Classify Different Things", accepted for publication by Eliva Press SRL Publication, Europe, with Registration No. 1020600000328.

Mr. Rajat Dungarwal   Mr. Vyom Makwana   Mr. Keyur Babariya

Mrs. Vishakha Shelke (Project Guide)

CONGRATULATIONS

Book Publication

Mr. Sridhar Iyer

Mrs. Sharvari Patil

Our Faculty Members, Mr. Sridhar C Iyer and Mrs. Sharvari Patil have authored a book titled 'Cyber Security' for the Gujarat Technological University (GTU), published by the TechNeo Publishers.

Our Faculty Members, Mrs. Kanchan Dabre published her paper in an IEEE Conference on Technologies for Future Cities 2021 (IEEE CTFC-2021) in the Software Technology Track.

Her Paper was titled "Deep Architecture For Diagnosis of Pneumonia in Thoracic Images"

CONGRATULATIONS

# Predicting Traffic Crashes Before They Happen With AI

TODAY'S WORLD IS ONE BIG MAZE, CONNECTED BY LAYERS OF CONCRETE AND ASPHALT THAT AFFORD US THE LUXURY OF NAVIGATION BY VEHICLE. FOR MANY OF OUR ROAD-RELATED ADVANCEMENTS — GPS LETS US FIRE FEWER NEURONS THANKS TO MAP APPS, CAMERAS ALERT US TO POTENTIALLY COSTLY SCRAPES AND SCRATCHES, AND ELECTRIC AUTONOMOUS CARS HAVE LOWER FUEL COSTS — OUR SAFETY MEASURES HAVEN'T QUITE CAUGHT UP. WE STILL RELY ON A STEADY DIET OF TRAFFIC SIGNALS, TRUST, AND THE STEEL SURROUNDING US TO SAFELY GET FROM POINT A TO POINT B.

TO GET AHEAD OF THE UNCERTAINTY INHERENT TO CRASHES, SCIENTISTS FROM MIT'S COMPUTER SCIENCE AND ARTIFICIAL INTELLIGENCE LABORATORY (CSAIL) AND THE QATAR CENTER FOR ARTIFICIAL INTELLIGENCE DEVELOPED A DEEP LEARNING MODEL THAT PREDICTS VERY HIGH-RESOLUTION CRASH RISK MAPS. FED ON A COMBINATION OF HISTORICAL CRASH DATA, ROAD MAPS, SATELLITE IMAGERY, AND GPS TRACES, THE RISK MAPS DESCRIBE THE EXPECTED NUMBER OF CRASHES OVER A PERIOD OF TIME IN THE FUTURE, TO IDENTIFY HIGH-RISK AREAS AND PREDICT FUTURE CRASHES.

TYPICALLY, THESE TYPES OF RISK MAPS ARE CAPTURED AT MUCH LOWER RESOLUTIONS THAT HOVER AROUND HUNDREDS OF METERS, WHICH MEANS GLOSSING OVER CRUCIAL DETAILS SINCE THE ROADS BECOME BLURRED TOGETHER. THESE MAPS, THOUGH, ARE 5×5 METER GRID CELLS, AND THE HIGHER RESOLUTION BRINGS NEWFOUND CLARITY: THE SCIENTISTS FOUND THAT A HIGHWAY ROAD, FOR EXAMPLE, HAS A HIGHER RISK THAN NEARBY RESIDENTIAL ROADS, AND RAMPS MERGING AND EXITING THE HIGHWAY HAVE AN EVEN HIGHER RISK THAN OTHER ROADS.

"BY CAPTURING THE UNDERLYING RISK DISTRIBUTION THAT DETERMINES THE PROBABILITY OF FUTURE CRASHES AT ALL PLACES, AND WITHOUT ANY HISTORICAL DATA, WE CAN FIND SAFER ROUTES, ENABLE AUTO INSURANCE COMPANIES TO PROVIDE CUSTOMIZED INSURANCE PLANS BASED ON DRIVING TRAJECTORIES OF CUSTOMERS, HELP CITY PLANNERS DESIGN SAFER ROADS, AND EVEN PREDICT FUTURE CRASHES," SAYS MIT CSAIL PHD STUDENT SONGTAO HE, A LEAD AUTHOR ON A NEW PAPER ABOUT THE RESEARCH.

EVEN THOUGH CAR CRASHES ARE SPARSE, THEY COST ABOUT 3 PERCENT OF THE WORLD'S GDP AND ARE THE LEADING CAUSE OF DEATH IN CHILDREN AND YOUNG ADULTS. THIS SPARSITY MAKES INFERRING MAPS AT SUCH A HIGH RESOLUTION A TRICKY TASK. CRASHES AT THIS LEVEL ARE THINLY SCATTERED — THE AVERAGE ANNUAL ODDS OF A CRASH IN A 5×5 GRID CELL IS ABOUT ONE-IN-1,000 — AND THEY RARELY HAPPEN AT THE SAME LOCATION TWICE. PREVIOUS ATTEMPTS TO PREDICT CRASH RISK HAVE BEEN LARGELY "HISTORICAL," AS AN AREA WOULD ONLY BE CONSIDERED HIGH-RISK IF THERE WAS A PREVIOUS NEARBY CRASH.
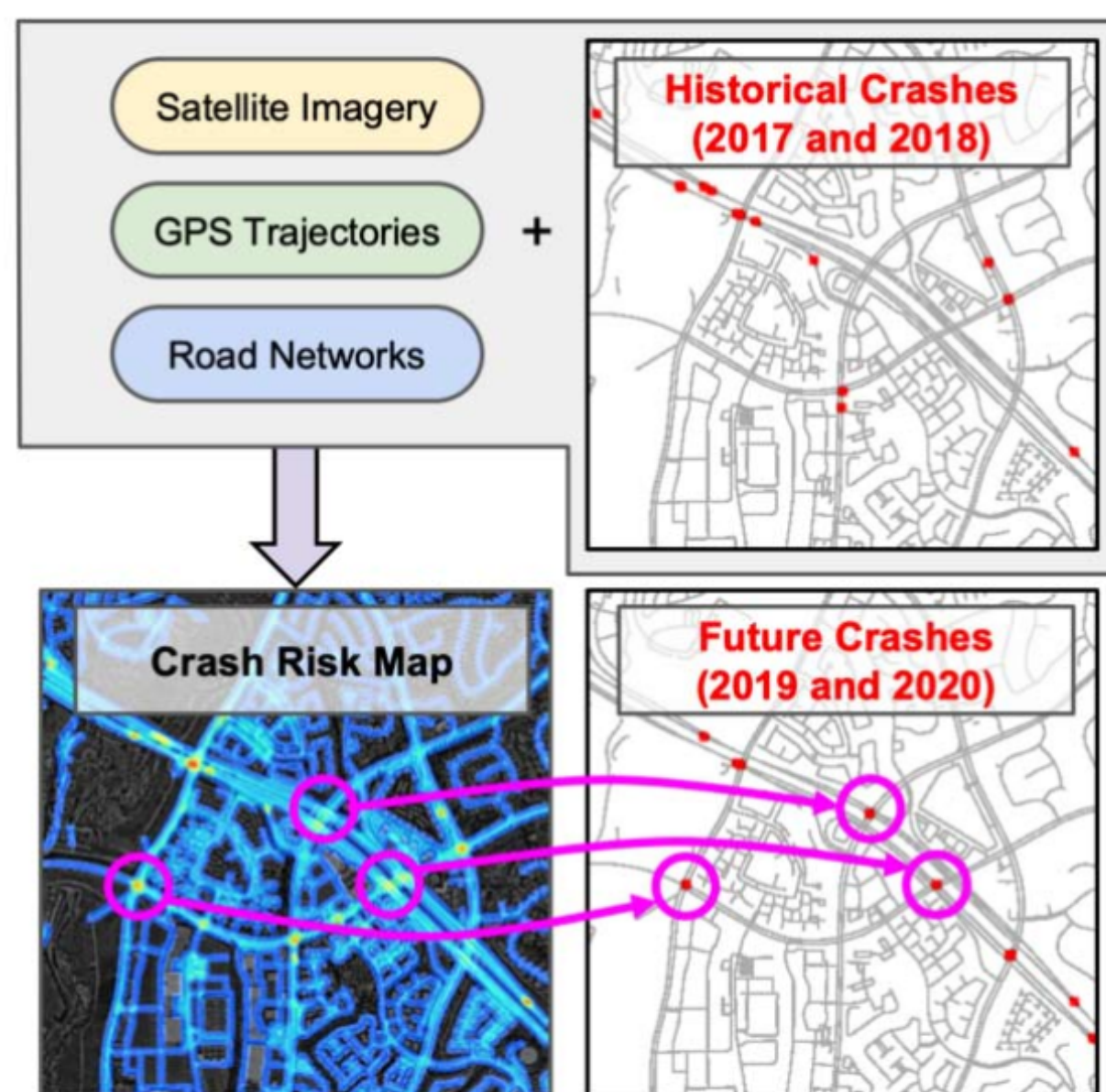
THE TEAM'S APPROACH CASTS A WIDER NET TO CAPTURE CRITICAL DATA. IT IDENTIFIES HIGH-RISK LOCATIONS USING GPS TRAJECTORY PATTERNS, WHICH GIVE INFORMATION ABOUT DENSITY, SPEED, AND DIRECTION OF TRAFFIC, AND SATELLITE IMAGERY THAT DESCRIBES ROAD STRUCTURES, SUCH AS THE NUMBER OF LANES, WHETHER THERE'S A SHOULDER, OR IF THERE'S A LARGE NUMBER OF PEDESTRIANS. THEN, EVEN IF A HIGH-RISK AREA HAS NO RECORDED CRASHES, IT CAN STILL BE IDENTIFIED AS HIGH-RISK, BASED ON ITS TRAFFIC PATTERNS AND TOPOLOGY ALONE.

TO EVALUATE THE MODEL, THE SCIENTISTS USED CRASHES AND DATA FROM 2017 AND 2018, AND TESTED ITS PERFORMANCE AT PREDICTING CRASHES IN 2019 AND 2020. MANY LOCATIONS WERE IDENTIFIED AS HIGH-RISK, EVEN THOUGH THEY HAD NO RECORDED CRASHES, AND ALSO EXPERIENCED CRASHES DURING THE FOLLOW-UP YEARS.

"OUR MODEL CAN GENERALIZE FROM ONE CITY TO ANOTHER BY COMBINING MULTIPLE CLUES FROM SEEMINGLY UNRELATED DATA SOURCES. THIS IS A STEP TOWARD GENERAL AI, BECAUSE OUR MODEL CAN PREDICT CRASH MAPS IN UNCHARTED TERRITORIES," SAYS AMIN SADEGHI, A LEAD SCIENTIST AT QATAR COMPUTING RESEARCH INSTITUTE (QCRI) AND AN AUTHOR ON THE PAPER. "THE MODEL CAN BE USED TO INFER A USEFUL CRASH MAP EVEN IN THE ABSENCE OF HISTORICAL CRASH DATA, WHICH COULD TRANSLATE TO POSITIVE USE FOR CITY PLANNING AND POLICYMAKING BY COMPARING IMAGINARY SCENARIOS."

THE DATASET COVERED 7,500 SQUARE KILOMETERS FROM LOS ANGELES, NEW YORK CITY, CHICAGO, AND BOSTON. AMONG THE FOUR CITIES, L.A. WAS THE MOST UNSAFE, SINCE IT HAD THE HIGHEST CRASH DENSITY, FOLLOWED BY NEW YORK CITY, CHICAGO, AND BOSTON.

Faculty Acheivements

Dr. Jitendra Saturwar has Completed a Course on **"Tableau Fundamentals"** offered by The Tableau eLearning Program

Dr. Jitendra Saturwar has Completed 20 hours of Course on **"AWS Academy Graduate – AWS Academy Machine Learning"** organized by AWS Academy

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