



PROGRAM

Monday 14th July |
Wednesday 16th July
Urban Sciences Building
Room USB.G.003
1 Science Square
Newcastle upon Tyne
NE4 5TG



MONDAY 14TH JULY

08:15-09:00 REGISTRATION & BREAKFAST

09:00-09:15 WELCOME TALK

09:15-10:15 PROF. JIM WEBBER KEYNOTE

10:15-10:45 COFFEE BREAK

10:45-12:15 LANGUAGE & MODELS

12:15-13:15 LUNCH BREAK

13:15-15:15 CLASSIFICATION

15:15-15:45 COFFEE BREAK

15:45-17:00 DISTRIBUTED SYSTEMS

18:00-20:00 WELCOME RECEPTION

TUESDAY 15TH JULY

08:00-08:45 REGISTRATION & BREAKFAST

08:45-09:45 DR LAURA HEELS KEYNOTE

09:45-10:15 COFFEE BREAK

10:15-11:45 QUERY ANSWERING & EDUCATION

11:45-12:45 LUNCH BREAK

13:00-16:30 PROF. MARIO NASCIMENTO
(**14:30** COFFEE BREAK)

17:00-19:00 SOCIAL DINNER

WEDNESDAY 16TH JULY

08:00-09:00 BREAKFAST

09:00-12:00 NEO4J

12:00-13:00 LUNCH BREAK

13:00-14:30 DATA MINING

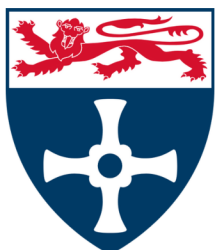
14:30-15:00 COFFEE BREAK

15:00-16:00 INDUSTRIAL PANEL

16:00-17:00 CLOSING REMARKS



MONDAY



08:15–09:00 REGISTRATION & BREAKFAST

09:00–09:15 WELCOME TALK

09:15–10:15 PROF. JIM WEBBER

KEYNOTE: THE PUB-TIME PARLIAMENT

10:15–10:45 COFFEE BREAK

10:45–12:15 LANGUAGE AND MODELS

SESSION CHAIR: PROF. MARIO NASCIMENTO:

1. SHOHAIB SHAFFIEY AND PETER REVESZ: "GENERATIVE ADVERSARIAL NETWORKS REVEAL RELATIONSHIP OF THE CARIAN, ELDER FUTHARK, OLD HUNGARIAN AND ORKHON SCRIPTS"
2. EMAN ALAMOUDI AND ELLIS SOLAIMAN: "EHSAN: LEVERAGING CHATGPT IN A HYBRID FRAMEWORK FOR ARABIC ASPECT-BASED SENTIMENT ANALYSIS IN HEALTHCARE"
3. MICHAEL MASON, SAM KIRCHNER AND CARTER POWELL: "AUTOMATED GLYPH FEATURE DETECTION USING CONVOLUTIONAL NEURAL NETWORKS"
4. HISSAH ALMOUSA AND ELLIS SOLAIMAN: "A VISION FOR ROBUST AND HUMAN-CENTRIC LLM-BASED QR CODE SECURITY"

12:15–13:15 LUNCH BREAK

13:15–15:15 CLASSIFICATION

SESSION CHAIR: PROF. PETER Z. REVESZ:

1. ALEXANDER STAHL: "EXPLORING CLASSIFICATION WITH SPECTRAL TRANSFORMATION"
2. DESPINA TAWADROS, WENHUI YANG, LENA WEISE AND VANESSA MEYER: "OPTIMIZING CLASSIFICATION ACCURACY WITH SIMULATED ANNEALING IN K-ANONYMITY"
3. SELAHATTIN BARIŞ ÇELEBI, AMMAR ASLAN AND MUTLU CANPOLAT: "PREDICTING GELATION IN COPOLYMERS USING DEEP LEARNING THROUGH A COMPARATIVE STUDY OF ANN, CNN, AND LSTM MODELS WITH SHAP EXPLAINABILITY"
4. MEHDI RABIEE, SERGIO GRECO, REZA SHAHBAZIAN AND IRINA TRUBITSYNA: "A TOTAL VARIATION REGULARIZED FRAMEWORK FOR EPILEPSY-RELATED MRI IMAGE SEGMENTATION"
5. MARY DUFIE AFRANE, YAO XU AND LIXIN LI: "ENHANCING FLIGHT DELAY PREDICTION WITH NETWORK-AWARE ENSEMBLE LEARNING"

15:15–15:45 COFFEE BREAK

15:45–17:00 DISTRIBUTED SYSTEMS

SESSION CHAIR: DR GIACOMO BERGAMI:

1. KASRA MOJALLAL, ALI ABBASI TADI AND DIMA ALHADIDI: "FEDMOD: VERTICAL FEDERATED LEARNING USING MULTI-SERVER SECRET SHARING"
2. YE LIU, PAUL EZHILCHELVAN, YINGMING WANG AND JIM WEBBER: "THROUGHPUT-DRIVEN DATABASE REPLICATION USING A RING-BASED ORDER PROTOCOL"
3. EDVAN SOARES AND VALERIA TIMES: "BLOCKCHAIN-BACKED FUZZY SEARCH FOR SEMI-STRUCTURED TRANSLATION DATA: A SCALABLE HYBRID APPROACH WITH HYPERLEDGER FABRIC AND ELASTICSEARCH"

18:00–20:00 WELCOME RECEPTION

EL COTO IS AN AUTHENTIC SPANISH RESTAURANT SITUATED IN THE HEART OF NEWCASTLE, JUST A STONE'S THROW FROM THE URBAN SCIENCE BUILDING



TUESDAY



08:00–08:45 REGISTRATION + BREAKFAST

08:45–09:45 DR LAURA HEELS

KEYNOTE: BIAS IN, BIAS OUT: THE CASE FOR PROTECTED CHARACTERISTICS IN DATA

09:45–10:15 COFFEE BREAK

10:15–11:45 QUERY ANSWERING & EDUCATION

SESSION CHAIR: DR. LAURA HEELS:

1. TIDENEK FEKADU KORE, DAVID SARRIMIA, MYOUNG-AH KANG AND FRANCOIS PINET: "TOWARDS SUSTAINABLE DBMS: A FRAMEWORK FOR REAL-TIME ENERGY ESTIMATION AND QUERY CATEGORIZATION"
2. BANAN ALKHATEEB AND ELLIS SOLAIMAN: "CONTEXT-AWARE VISUALIZATION FOR EXPLAINABLE AI RECOMMENDATIONS IN SOCIAL MEDIA: A VISION FOR USER-ALIGNED EXPLANATIONS"
3. MARYAM MOSLEH, ELLIS SOLAIMAN AND MARIE DELVIN: "TRANSPARENT ADAPTIVE LEARNING VIA DATA-CENTRIC MULTIMODAL EXPLAINABLE AI"
4. VANESSA MEYER, LENA WIESE AND AHMED AL-GHEZI: "ANALYZING STUDENT FEEDBACK TO ASSESS NOSQL EDUCATION"

11:45–12:45 LUNCH BREAK

13:00–16:30 PROF. MARIO NASCIMENTO

TUTORIAL: APPROXIMATE NEAREST NEIGHBOR QUERIES AND VECTOR DATABASES

THE DATABASE COMMUNITY HAS BEEN ABLE TO DEAL, IN ONE WAY OR ANOTHER, WITH SPATIAL AND HIGH-DIMENSIONAL DATA FOR A LONG TIME. HOWEVER, WITH THE INCREASING USE OF AI/MACHINE LEARNING, PARTICULARLY LARGE LANGUAGE MODELS AND SO-CALLED EMBEDDINGS, VERY HIGH-DIMENSIONAL VECTORS NEED TO BE MANAGED AS FIRST-CLASS CITIZENS, LEADING TO WHAT IS KNOWN AS VECTOR DATABASES. IN THIS TUTORIAL, AFTER LAYING THE NECESSARY BACKGROUND, WE FOCUS ON AN IMPORTANT CLASS OF QUERIES WITHIN VECTOR DATABASES, NAMELY APPROXIMATE NEAREST NEIGHBOR QUERIES, PRESENTING AND CONTRASTING VARIOUS APPROACHES TO PROCESS THEM. WE WILL ALSO LIST CURRENT CHALLENGES WORTHY OF FURTHER RESEARCH AND, TIME PERMITTING, DISCUSS EXISTING COMMERCIAL VECTOR DATABASE MANAGEMENT SYSTEMS. (WITH COFFEE BREAK **AT 14:30**)

17:00–19:00 SOCIAL DINNER

BLACKFRIARS RESTAURANT IS SET WITHIN A 13TH-CENTURY FORMER DOMINICAN FRIARY. ESTABLISHED IN 1239 IT REMAINS THE JEWEL OF NEWCASTLE'S MEDIEVAL PAST AND HAS A FASCINATING HISTORY.

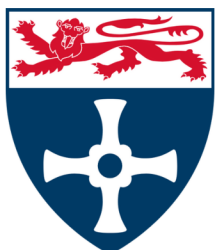
THE MENU WILL BE DISTRIBUTED TO THE PARTICIPANTS AT REGISTRATION TIME.

A DETAILED ACCESS GUIDE CAN BE FOUND:

[HTTPS://WWW.ACCESSABLE.CO.UK/NEWCASTLE-GATESHEAD/ACCESS-GUIDES/BLACKFRIARS-RESTAURANT](https://www.accessable.co.uk/newcastle-gateshead/access-guides/blackfriars-restaurant)



WEDNESDAY



08:00–09:00 BREAKFAST

09:00–12:00 NEO4J

TUTORIAL: MODERN GRAPH DATABASES: PRACTICE AND RESEARCH

DRIVEN BY A RISE IN THE COMPLEXITY AND ASSOCIATIVITY OF MODERN DATA, GRAPH DATABASES HAVE BECOME INCREASINGLY COMMONPLACE IN INFORMATION SYSTEMS. WITH THE AI WAVE UPON US, GRAPH DATABASES ARE INCREASINGLY CRITICAL FOR CREATING DEPENDABLE SYSTEMS (VIA ARCHITECTURAL PATTERNS LIKE GRAPHRAG). THIS TUTORIAL WILL PLACE GRAPH DATABASES IN CONTEXT FOR SYSTEMS AND RESEARCH PROFESSIONALS HELPING TO DIFFERENTIATE THEM FROM RELATIONAL, NOSQL, AND SEMANTIC WEB TOOLS. IT WILL HELP ATTENDEES TO UNDERSTAND HOW TO BUILD A GRAPH DATA MODEL AND QUERY IT WITH THE CYPHER QUERY LANGUAGE (A PRECURSOR AND CLOSE RELATIVE OF THE NEW ISO GQL STANDARD). IT WILL ALSO PROVIDE ARCHITECTURAL GUIDANCE ON HOW TO INTEGRATE GRAPH DATA WITH MODERN AI SYSTEMS. FOR RESEARCHERS, THE TUTORIAL WILL HIGHLIGHT SOME OF THE NOVEL CHALLENGES THAT ARISE WHEN BUILDING GRAPH DATABASES (COMPARED TO OTHER DATABASE TYPES) AND DISCUSS HOW THE NEO4J ENGINEERING AND RESEARCH TEAMS HAVE SOUGHT TO ADDRESS THOSE CHALLENGES IN THE PAST AND IN THE NEAR FUTURE.

12:00–13:00 LUNCH BREAK

13:00–14:30 DATA MINING

SESSION CHAIR: PROF. LIXIN LI:

1. PETER REVESZ AND MOHANENDRA SIDDHA : "DATA MINING FOR LANGUAGE SUPERFAMILIES USING CONGRUENT SOUND GROUPS"
2. JOSLIN ISHIMWE, ADRIAN RATWATTE AND PRINCE NGIRUWONSANGA: "COMPUTATIONAL DECIPHERMENT AND CROSS-LINGUISTIC ANALYSIS OF LINEAR A, LINEAR B, AND SWAHILI"
3. HARSH TAMKIYA, GUNJIT AGRAWAL, CHIRADEEP DEBNATH AND PETER REVESZ: "AUTOMATED IDENTIFICATION OF ALLOGRAPHS AMONG THE INDUS VALLEY SCRIPT SIGNS"

14:30–15:00 COFFEE BREAK

15:00–16:00 INDUSTRIAL PANEL

INDUSTRIAL PANEL DISCUSSION: THE ROLE OF DATABASES IN THE AGE OF AI

- **DR. MAC MISIURA** IS A SOFTWARE ENGINEER AT RED HAT, WORKING ON THE OPENSIFT AI TRUSTYAI TEAM.
- **DR. ANNA OLLERENSHAW** IS A SOLUTIONS ARCHITECT AT NVIDIA DELIVERING AI/DEEP LEARNING SOLUTIONS ACROSS DIVERSE INDUSTRIES AND PARTNERS.
- **LOUISE BRAITHWAITE** IS A DATA SCIENTIST AT THE UK'S NATIONAL INNOVATION CENTRE FOR DATA (NICD) WHERE SHE WORKS ON A WIDE VARIETY OF DATA SCIENCE PROJECTS WITH COMPANIES OF ALL SIZES ACROSS A WIDE RANGE OF SECTORS.
- **DR. JIM WEBBER** IS NEO4J'S CHIEF SCIENTIST AND VISITING PROFESSOR AT NEWCASTLE UNIVERSITY. AT NEO4J.
- **PAUL WATSON FRENG FBCS** IS DIRECTOR OF THE UK'S NATIONAL INNOVATION CENTRE FOR DATA AND PROFESSOR OF COMPUTER SCIENCE AT NEWCASTLE UNIVERSITY.

16:00–17:00 CLOSING REMARKS