ICMR 2019 Program

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Mayor/Maire

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On behalf of Members of Ottawa City Council, it is my distinct pleasure to extend a warm welcome to all those participating in the **ACM International Conference on Multimedia Retrieval** (**ICMR**) **2019**, taking place at the University of Ottawa, on unceded Algonquin territory, from June 10th to 13th .

I am equally delighted that Canada's fourth largest city, and an important centre for cutting-edge research and higher education, has been selected as the host venue for this annual gathering. This meeting provides a valuable forum for researchers, practitioners, and other stakeholders working with multimedia retrieval systems to gain greater insight into innovative research relating to multimedia retrieval, and explore applications to ensure that multimedia retrieval technologies can be practically utilized in real-world use cases.

As Head of Council, I want to acknowledge the Association for Computing Machinery (ACM), along with the guest speakers, facilitators and sponsors for dedicating efforts, services, expertise and resources to the successful organization of this insightful conference.

Tourists will want to explore the National Arts Centre, and its spectacular new façade. The newly expanded Ottawa Art Gallery will amaze visitors with captivating works by the Group of Seven.

Allow me to convey my best wishes to the participants for a productive and rewarding assembly, as well as to the visitors for a most enjoyable stay in Ottawa.

Sincerely,

J'ai l'immense plaisir de souhaiter une cordiale bienvenue, au nom des membres du Conseil municipal d'Ottawa, à tous les participants à l'**International Conference on Multimedia Retrieval** (**ICMR**) **2019 de l'ACM**, qui aura lieu à l'Université d'Ottawa, sur un territoire algonquin non cédé, du 10 au 13 juin.

Je suis également ravi que la quatrième ville en importance du Canada, pôle majeur de recherche de pointe et d'enseignement supérieur, ait été choisie comme ville-hôte pour ce rassemblement annuel. Cette assemblée fournira un cadre précieux où les chercheurs, les professionnels et d'autres intervenants qui utilisent dans leur travail des systèmes de recherche multimédia pourront en apprendre davantage sur la recherche novatrice dans le domaine et explorer des applications pour s'assurer qu'il est possible d'utiliser concrètement les technologies de recherche multimédia dans des situations réelles.

En tant que chef du Conseil, je tiens à remercier l'Association for Computing Machinery (ACM) ainsi que les conférenciers invités, les animateurs et les commanditaires de consacrer leurs efforts, leurs services, leur savoir-faire et leurs ressources à l'organisation de cette conférence fort instructive pour en assurer le succès.

Les touristes voudront explorer le Centre national des Arts, dont la spectaculaire nouvelle façade. La Galerie d'art d'Ottawa, nouvellement agrandie, fascinera les visiteurs, grâce à des œuvres captivantes du Groupe des Sept.

Permettez-moi de souhaiter aux participants une assemblée fructueuse et enrichissante et aux visiteurs un séjour des plus agréables à Ottawa.

Meilleures salutations.

Jim Watson, Mayor/Maire

WELCOME TO OTTAWA!

On behalf of Ottawa Tourism, we extend to you a warm welcome to our beautiful city. Ottawa is incredibly proud to host the ACM International Conference on Multimedia Retrieval (ICMR) 2019.

Nestled at the junction of three rivers and the UNESCO World Heritage Site, the Rideau Canal, Ottawa is considered one of the world's most beautiful capitals. The city features a thriving cultural scene, a wealth of historic landmarks, wide-open green spaces and parks, and delivers a truly unique Canadian experience. Our national museums devoted to science, technology, aerospace, and more, offer creative, ground breaking, and state-of-the-art exhibitions, as well as modern convention venues, offering a unique and inspiring meeting experience to its delegates. Bordering the province of Quebec, Ottawa offers a dynamic cultural milieu in which both French and English cultures and languages are treasured. Add all of that to its clean, green, and natural setting, and you've got a capital that attracts millions of visitors every year.

When your business is done, we encourage you to explore some of the many attractions of the area. We are pleased to offer you our "Flash Your Badge" program. This tool allows you to explore Canada's Capital the way YOU want to experience it! There are plenty of discounts available to you, just by flashing your delegate badge at participating attractions and restaurants in Ottawa www.ottawatourism.ca/fyb.

To find out what's on while you're here visit www.ottawatourism.ca and be sure to share your experiences with us on social media using the hashtag **#MyOttawa**. We hope that your time in Ottawa is productive and fulfilling.

Enjoy your visit to Ottawa and we sincerely hope we have the pleasure of welcoming you back soon!

Michael Crockatt
President & CEO

@Ottawa_Tourism | @TourismeOttawa

@OttawaTourism

VisitOttawa

150 Elgin Street, Suite 1405, Ottawa, ON K2P 1L4
1.800.363.4465 (Canada/U.S.) Fax 613.237.7339 | ottawatourism.ca

ACM ICMR 2019 Welcome Message from General Chairs and Program Chairs

ACM ICMR is one of the premier, annual conferences in the general multimedia community mainly sponsored by ACM SIGMM. This conference focuses on multimedia information retrieval with a wide spectrum of topics ranging from multimedia/multimodal content understanding and learning, multimedia/multimodal information search and retrieval, all the way to multimedia/multimodal data security and processing.

For the conference regular program, we have received 83 submissions to the long paper track and another 23 submissions to the short paper track. The submissions are from all over the world. The program committee, led by the program chairs, has done a fabulous job in managing reviewing all the submissions. Each submission has received at least three independent reviews. In the borderline cases, additional reviews are added in order to reach a fair decision. After the rigorous reviews, we have accepted 26 long papers, resulting in an acceptance rate of 31%, and all the short submissions as poster presentations. We would like to send our warm congratulations to the authors of all the accepted papers on being selected to be able to present their work in this conference. Consequently, the regular program of this conference consists of the oral presentations of long papers and spotlight presentations of the short papers together with the poster presentations of the short papers. We shall also have a dedicated session to the candidates of the accepted long papers for competing for the best paper award and the best student paper award.

In addition to the regular program, this conference also has a wide suite of other technical and social events. The technical program also includes special session presentations organized by our special session leaders that are selected from careful reviews of the received special session proposals, demo presentations that are selected from the careful reviews of the received demo proposals, the new brave ideas session selected from all the submissions that are considered to have new and brave ideas, a doctoral symposium session that consists of presentations by doctoral students about their thesis research that fits into the theme of the conference, a panel discussion that focuses on a hot topic with perspectives from a group of leaders in this community, and a session for industrial and practitioner day where leading industrial partners give presentations and demos about their current technologies supporting the business related to this community. Of course, the regular program offers keynote speeches from well-known leaders to provide their insight and inspirations to the audience.

In addition to the regular program, on the first day of the conference before the regular program begins, we have two tutorials and three workshops covering a diverse range of topics related to multimedia retrieval and search.

The social events of this conference include a welcome reception open to all the conference attendees in the evening of the first

day, a gala dinner in the night of the third day in which we shall announce the winners of the best paper award and the best student paper award, and the exhibition booths open to all the attendees from leading industrial partners.

We would like to thank all the members of the organization committee of this conference who have put enormous efforts in generating this excellent and exciting program. We would like to thank all the members of the various committees of the organization committee for their industrious efforts to finally come to this excellent program. We would like to thank the conference keynote and workshop invited speakers for their delivering inspiring talks to this conference. We would like to thank all the tutorial speakers and workshop organizers for their dedications and tremendous efforts in organizing these events. We would like to thank our sponsors for the generous support to this conference. We would like to thank the local conference management team and student volunteers for their diligent work in ensuring this successful and exciting conference. Last but not the least, we would like to thank all the authors and participants for your contributions and attendances to this conference, which are the foundation to lead to a successful conference like this one.

Abdulmotaleb El Saddik
Alberto Del Bimbo
Zhongfei Zhang
ICMR'19 General Chairs

K. Selcuk Candan
Marco Bertini
Lixing Xie
Xiao-Yong Wei
ICMR'19 Program Chairs

Venues:

SITE: SITE Building, 800 King Edward Ave, Ottawa, ON K1N 6N5
DMS: Desmarais Building, 55 Laurier Ave E, Ottawa, ON K1N 6N5
Les Grillades: 111 Colonnade Rd, Nepean, ON K2E 7M3
(http://www.lesgrillades.ca/index.html)

Day 1: June 10, 2019

8:00 – 17:00 Registration

9:00 – 11:00 Tutorial "Interactive Video Retrieval in the Age of Deep Learning" (SITE C0136)

11:00 – 12:30 Workshop "Lifelog Search Challenge" (SITE C0136)

9:00 – 12:30 Workshop "Multimedia for Cooking and Eating Activities" (SITE F0126)

9:00 – 12:30 Workshop "Cross-modal Learning and Application" (SITE J0106)

10:30 – 11:00 Coffee Break

12:30 – 13:30 Lunch

13:30 – 17:30 Tutorial "Similarity Search in 3D Human Motion Data" (SITE J0106)

13:30 – 17:30 Workshop "Lifelog Search Challenge" (SITE C0136)

13:30 – 17:30 Workshop "Multimedia for Cooking and Eating Activities" (SITE F0126)

15:30 – 16:00 Coffee Break

18:30 Welcome Reception (DMS 12102)

Beginning with Day 2, all the program is located in SITE A0150 and all the coffee breaks and lunches are in SITE Entrance-Rotunda

Day 2: June 11, 2019

8:00 – 17:00: Registration

8:50 – 9:00 Opening Remarks

9:00 – 10:00 Keynote

Chair: Abdulmotaleb El Saddik, University of Ottawa, Canada

Towards Explainability in AI and Multimedia Research

Prof. Tat-Seng Chua, National University of Singapore

10:00 – 10:30 Coffee Break

10:30 – 11:30 New Brave Ideas and Doctoral Symposium Session (3 talks)

Chair: Zhongfei Zhang, SUNY Binghamton, US

- T. Liu, J. Liao, Z. Wu, Y. Wang, and J. Wang, A Geographical-Temporal Awareness Hierarchical Attention Network for Next Point-of-Interest Recommendation
- T. Karayli, P. Blandfort, J. Hees, and A. Dengel, The Focus-Aspect-Polarity Model for Explainable Prediction of Subjective Visual Interpretation
- T. Grosup, Methods of multi-modal data exploration

11:30 – 12:10 Spotlight Presentation 1 (18 talks)

Chair: Zhongfei Zhang, SUNY Binghamton, US

- T. Liu, J. Liao, Z. Wu, Y. Wang, and J. Wang, A Geographical-Temporal Awareness Hierarchical Attention Network for Next Point-of-Interest Recommendation
- T. Karayli, P. Blandfort, J. Hees, and A. Dengel, The Focus-Aspect-Polarity Model for Explainable Prediction of Subjective Visual Interpretation
- G. Strezoski, N. van Noord, and M. Worring, Learning Task Relatedness in Multi-Task Learning for Images in Context
- X. Weng, Y. Li, L. Chi, and Y. Mu, High-Capacity Convolutional Video Steganography with Temporal Residual Modeling
- Y. Wang, C. Chen, J. Wang, and Y. Zhu, Learning Discriminative Features for Image Retrieval
- H. Chen, B. Rouhani, C. Fu, and F. Koushanfar, DeepMarks: A Secure Fingerprinting Framework for Digital Rights Management of Deep Learning Models
- Y. Yang, L. Geng, H. Lai, Y. Pan, and J. Yin, Feature Pyramid Hashing
- S. Wang, H. Lai, Y. Yang, and J. Yin, Deep Policy Hashing Network with

Listwise Supervision

- W. Chen, J. Chen, F. Zou, Y.-F. Li, P. Liu, Q. Wang, and W. Zhao, RobustiQ:A Robust ANN Search Method for Billion-scale Similarity Search on GPUs
- Z. Hu, X. Wang, X. Liu, Y.-M. Cheung, N. Wang, and W. Fan, Triplet Fusion Network Hashing for Unpaired Cross-Modal Retrieval
- J. Sedmidubsky, P. Elias, and P. Zezula, Benchmarking Search and Annotation in Continuous Human Skeleton Sequences
- J. Vargas Muñoz, Z. Dias, and R. Torres, A Genetic Programming Approach for Searching on Nearest Neighbors Graphs
- X. Nie, H. Lu, Z. Wang, and J. Liu, Weakly supervised image retrieval via coarse-scale feature fusion and multi-level attention blocks
- P. Eze, U. Parampalli, R. Evans, and D. Liu, Integrity Verification in Medical Image Retrieval Systems using Spread Spectrum Steganography
- L. Valem and D.C.G. Pedronette, An Unsupervised Genetic Algorithm Framework for Rank Selection and Fusion on Image Retrieval
- Z. Li, L. Lin, C. Zhang, H. Ma, and W. Zhao, Collaborating CNN and SVM for Automatic Image Annotation
- L. Zhang, S. Zhang, P. Shen, G. zhu, S. Afaq Ali Shah, and M. Bennamoun, Relationship Detection Based on Object Semantic Inference and Attention Mechanisms
- F. Ababsa, H. Hadjabdelkader, M. Boui, 3D Human Tracking with Catadioptric Omnidirectional Cameras

12:10 – 14:00 Lunch with Poster Presentations for Spotlight 1

14:00 – 15:20 Long Presentation Session 1: Learning and Security (4 talks)
Chair: Cathal Gurrin, Dublin City University, Irland

- G. Strezoski, N. van Noord, and M. Worring, Learning Task Relatedness in Multi-Task Learning for Images in Context
- X. Weng, Y. Li, L. Chi, and Y. Mu, High-Capacity Convolutional Video Steganography with Temporal Residual Modeling
- Y. Wang, C. Chen, J. Wang, and Y. Zhu, Learning Discriminative Features for Image Retrieval
- H. Chen, B. Rouhani, C. Fu, and F. Koushanfar, DeepMarks: A Secure Fingerprinting Framework for Digital Rights Management of Deep Learning Models

15:20 – 15:50 Coffee Break

15:50 – 17:10 Long Presentation Session 2： Multimedia Hashing and Search I (4 talks)
Chair: Cathal Gurrin, Dublin City University, Irland

- Y. Yang, L. Geng, H. Lai, Y. Pan, and J. Yin, Feature Pyramid Hashing
- S. Wang, H. Lai, Y. Yang, and J. Yin, Deep Policy Hashing Network with Listwise Supervision

- W. Chen, J. Chen, F. Zou, Y.-F. Li, P. Liu, Q. Wang, and W. Zhao, RobustiQ:A Robust ANN Search Method for Billion-scale Similarity Search on GPUs
- Z. Hu, X. Wang, X. Liu, Y.-M. Cheung, N. Wang, and W. Fan, Triplet Fusion Network Hashing for Unpaired Cross-Modal Retrieval

Day 3: June 12, 2019

8:00 – 17:00 Registration

8:50 – 9:00 Conference Administration

9:00 – 10:20 Panel

Theme: AI Comes to Multimedia Retrieval

Moderator: Benoit Huet, Eurecom, France

Panelists: Kiyo Aizawa, University of Tokyo, Japan

Tat-Seng Chua, National University of Singapore, Singapore

Martha Larson, Radboud University, Netherlands

Marcel Worring, University of Amsterdam, Netherlands

10:20 – 10:50 Coffee Break

10:50 – 12:10 Best Paper Award Session (4 talks)

Chair: K. Selcuk Candan, Arizona State University, US

- Q. Wang, F. Su, and Y. Wang, A Hierarchical Attentive Deep Neural Network Model for Semantic Music Annotation Integrating Multiple Music Representations
- N. Garcia, B. Renoust, and Y. Nakashima, Context-Aware Embeddings for Automatic Art Analysis
- C. Otto, M. Springstein, A. Anand, and R. Ewerth, Understanding, Categorizing and Predicting Semantic Image-Text Relations
- W. Gu, X. Gu, J. Gu, B. Li, Z. Xiong, and W. Wang, Adversary Guided Asymmetric Hashing for Cross-Modal Retrieval

12:10 – 12:50 Spotlight Presentation 2 (20 talks)

Chair: Marcel Worring, University of Amsterdam, Netherlands

- Q. Wang, F. Su, and Y. Wang, A Hierarchical Attentive Deep Neural Network Model for Semantic Music Annotation Integrating Multiple Music Representations
- N. Garcia, B. Renoust, and Y. Nakashima, Context-Aware Embeddings for Automatic Art Analysis
- C. Otto, M. Springstein, A. Anand, and R. Ewerth, Understanding, Categorizing and Predicting Semantic Image-Text Relations
- W. Gu, X. Gu, J. Gu, B. Li, Z. Xiong, and W. Wang, Adversary Guided Asymmetric Hashing for Cross-Modal Retrieval
- B. Zhang, X. Huang, C. Yang, and J. Yuan, Cross-Modal Video Moment Retrieval with Spatial and Language-Temporal Attention
- P. Kang, Z. Lin, Z. Yang, X. Fang, Q. Li, and W. Liu, Deep Semantic Space with Intra-class Low-rank Constraint for Cross-modal Retrieval

- S. Choi, S. Matsumura, and K. Aizawa, Assist Users' Interactions in Font Search with Unexpected but Useful Concepts Generated by Multimodal Learning
- P.-Y. Huang, Valbhav, X. Chang, and A. Hauptmann, Improving What Cross-Modal Retrieval Models Learn through Object-Oriented Inter- and Intra-Modal Attention Networks
- C. Ma, F. Yang, Y. Zhuang, Z. Zhang, H. Jia, and X. Xie, Deep Association: End-to-end Graph-Based Learning for Multiple Object Tracking with Conv-Graph Neural Network
- T.-Y. Hu and A. Hauptmann, Multi-shot Person Re-identification through Set Distance with Visual Distributional Representation
- Y. Zhu, Y. Fu, and Y,-G. Jiang, Take Goods from Shelves: A Dataset for Class-incremental Object Detection
- X. Shang, D. Di, J. Xiao, Y. Cao, X. Yang, and T.-S. Chua, Annotating Objects and Relations in User-Generated Videos
- J. Lokoc, G. Kovalcik, T. Soucek, J. Moravec, and P. Cech, VIRET: A video retrieval framework for interactive known-item search
- Y. Patel, L. Gomez, M. Rusinol, D. Karatzas, and C.V. Jawahar, Self-Supervised Visual Representations for Cross-Modal Retrieval
- Bhattacharya, A. Chowdhury, and V. Raykar, Multi-modal dialog for browsing large visual catalogs using exploration-exploitation paradigm in a joint embedding space
- S. Karaman, X. Lin, X. Hu, and S.-F. Chang, Unsupervised Rank-Preserving Hashing for Large-Scale Image Retrieval
- S. Chowdhuri, PhonoNet: Multi-Stage Deep Neural Networks for Raga Identification in Hindustani Classical Music
- P. Jiang and Y. Han, Hierarchical Variational Network for User-Diversified & Query-Focused Video Summarization
- Q. Sun and Y. Fu, Stacked Self-Attention Networks For Visual Question Answering
- S. Zhang, J. Li, and B. Zhang, Joint Cluster Unary Loss for Efficient Cross-Modal Hashing

12:50 – 14:00 Lunch with Poster Presentations for Spotlight 2

14:00 – 15:20 Long Presentation Session 3: Cross-Media Retrieval (4 talks)
Chair: Marcel Worring, University of Amsterdam, Netherlands

- B. Jiang, X. Huang, C. Yang, and J. Yuan, Cross-Modal Video Moment Retrieval with Spatial and Language-Temporal Attention
- P. Kang, Z. Lin, Z. Yang, X. Fang, Q. Li, and W. Liu, Deep Semantic Space with Intra-class Low-rank Constraint for Cross-modal Retrieval
- S. Choi, S. Matsumura, and K. Aizawa, Assist Users' Interactions in Font Search with Unexpected but Useful Concepts Generated by Multimodal Learning
- P.-Y. Huang, Valbhav, X. Chang, and A. Hauptmann, Improving What Cross-Modal Retrieval Models Learn through Object-Oriented Inter- and Intra-Modal

Attention Networks

15:20 – 15:50 Coffee Break

15:50 – 17:10 Long Presentation Session 4: Multimedia Object Tracking (4 talks)
Chair: Kiyoharu Aizawa, University of Tokyo, Japan

- C. Ma, F. Yang, Y. Zhuang, Z. Zhang, H. Jia, and X. Xie, Deep Association: End-to-end Graph-Based Learning for Multiple Object Tracking with Conv-Graph Neural Network
- T.-Y. Hu and A. Hauptmann, Multi-shot Person Re-identification through Set Distance with Visual Distributional Representation
- Y. Hao, Y. Fu, and Y,-G. Jiang, Take Goods from Shelves: A Dataset for Class-incremental Object Detection
- X. Shang, D. Di, J. Xiao, Y. Cao, X. Yang, and T.-S. Chua, Annotating Objects and Relations in User-Generated Videos

17: 10 – 18:30 Break

18:30 Conference Dinner (Les Grillades) - 111 Colonnade Rd, Nepean, ON K2E 7M3

Day 4: June 13, 2019

8:00 – 17:00 Registration

8:50 – 9:00 Conference Administration

9:00 – 10:20 Long Presentation Session 5: Multimedia Hashing and Search II (4 Talks)
Chair: Benoit Huet, Eurocom, France

- Mourao and J. Magalhaes, Towards Cloud Distributed Image Indexing by Sparse Hashing
- N. Li, B. Liu, Z. Han, Y.-S. Liu, and J. Fu, Emotion Reinforced Visual Storytelling
- Z. Liu, Z. Zhao, and M. Larson, Who's Afraid of Adversarial queries? The Impact of Image Modifications on Content-based Image Retrieval
- Y. Garg and K.S. Candan, RACKNet : Robust Allocation of Convolutional Kernels in Neural Networks for Image Classification

10:20 – 10:40 Spotlight Presentation 3 (10 talks)
Chair: Laurent Amsaleg, French National Center for Scientific Research, France

- Mourao and J. Magalhaes, Towards Cloud Distributed Image Indexing by Sparse Hashing
- N. Li, B. Liu, Z. Han, Y.-S. Liu, and J. Fu, Emotion Reinforced Visual Storytelling
- Z. Liu, Z. Zhao, and M. Larson, Who's Afraid of Adversarial queries? The Impact of Image Modifications on Content-based Image Retrieval
- Y. Garg and K.S. Candan, RACKNet : Robust Allocation of Convolutional Kernels in Neural Networks for Image Classification
- G. Marcelino, D. Semedo, S. Blasi, M. Mrak, A. Mourao, and J. Magalhaes, Understanding Automatic Visual Storytelling in Social Media
- O. Jafari, J. Ossorgin, and P. Nagarkar, qwLSH: Cache-conscious Indexing for Processing Similarity Search Query Workloads in High-Dimensional Spaces
- F. Bems, L. Rossetto, K. Schoffmann, C. Beecks, and G. Awad, V3C1 Dataset: An Evaluation of Content Characteristics
- S.C.Y. Hung, J.-H. Lee, T.S.T. Wan, C.-H. Chen, Y.-M. Chan, and C.-S. Chen, Increasingly Packing Multiple Facial-Informatics Modules in A Unified Deep-Learning Model
- M. Jian, T. Jia, X. Yang, L. Wu, and L. Huo, Cross-modal Collaborative Manifold Propagation for Image Recommendation
- X. Du, X. Yang, Z. Qin, and J. Tang, Gradual Image Enhancement under Aesthetic Guidance

10:40 – 11:10 Coffee Break

11:10 – 12:30 Special Session: MMAC: Multi-Modal Affective Computing of Large-Scale Multimedia Data （4 talks)

Chair: Leida Li, China University of Mining and Technology, China

- Y. Zong, W. Zheng, X. Hong, C. Tang, Z. Cui, and G. Zhao, Cross-Database Micro-Expression Recognition: A Benchmark
- L. Li, Y. Yang, and H. Zhu, Naturalness Preserved Image Aesthetic Enhancement with Perceptual Encoder Constraint
- D. Cong, Y. Zhao, B. Qin, Y. Han, M. Zhang, A. Liu, N. Chen, Attention-based Hierarchical Neural Recommender with Explanations
- T. He and X. Jin, Image Emotion Distribution Learning with Graph Convolutional Networks

12:30 – 14:00 Lunch with Poster Presentations for Spotlight 3 and the oral presentations in the Special Session

14:00 – 15:40 Demo Session

Chair: Laurent Amsaleg, French National Center of Scientific Research, France

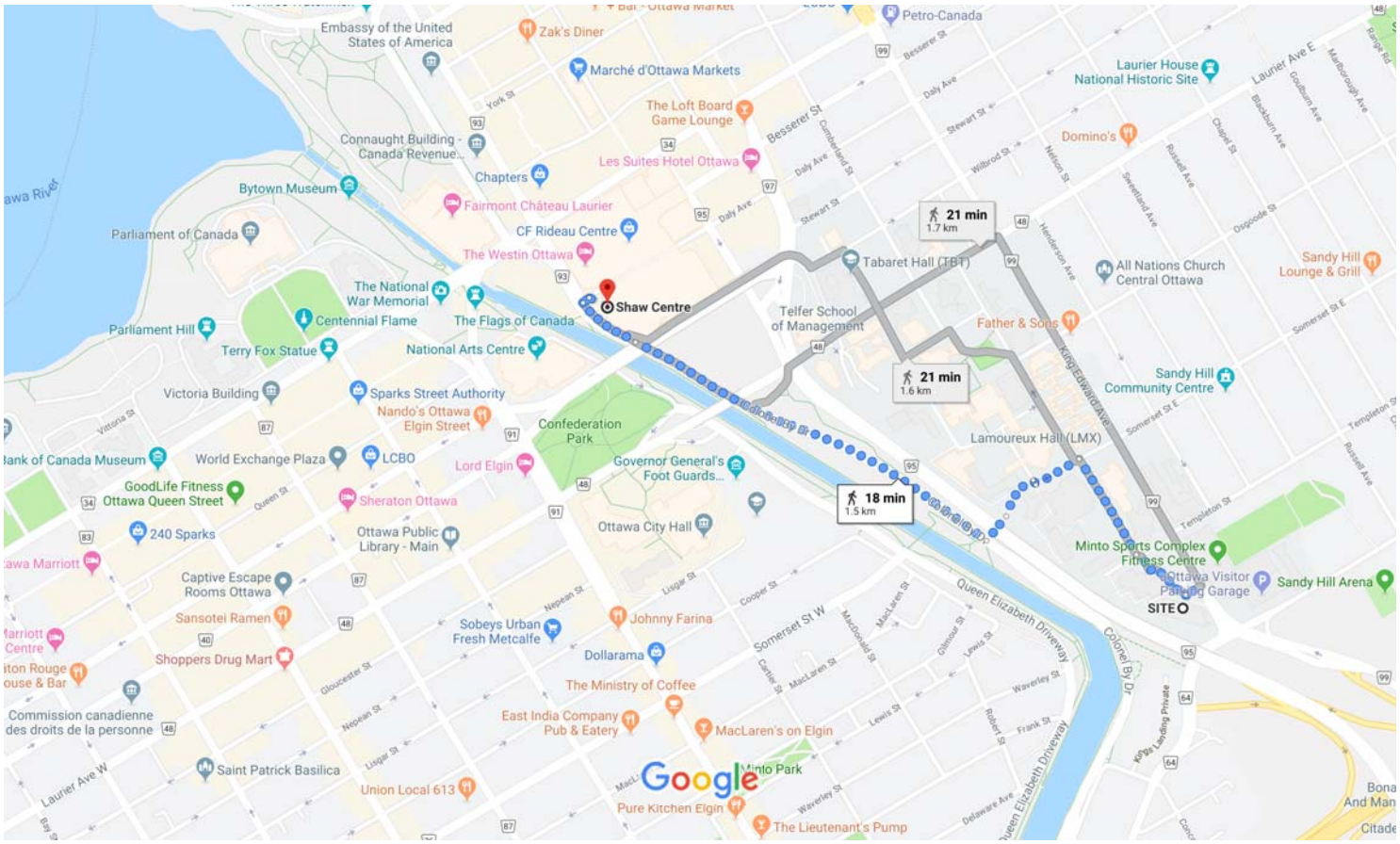
- R. Gasser, L. Rossetto, and H. Schuldt, Multimodal Multimedia Retrieval with vitrivr
- J. Sedmidubsky and P. Zezula, Recognizing User-Defined Subsequences in Human Motion Data
- Z.-P. Wei, J.-J. Chen, Z.-Y. Ming, C.-W. Ngo, T.-S. Chua, and F.-F. Zhou, DietLens-Eout: Large Scale Restaurant Food Photo Recognition
- M. Abdur Rahman, G. Loukas, S. Maruf Abdulah, A. Abdu, S. Sadiqur Rahman, E. Hassanain, and Y. Arafa, Blockchain and IoT-based Secure Multimedia Retrieval System for a Massive Crowd: Sharing Economy Perspective
- J. He, X. Liu, and S. Zhang, EAGER: Edge-Aided imaGe undERstanding System

15:40 – 16:10 Coffee Break

16:10 – 17:10 Industrial and Practitioner Day Session

Chair: Martin Klinkigt, Hitachi, Japan

Google Maps SITE, King Edward Avenue, Ottawa, ON to Shaw Centre Walk 1.5 km, 18 min

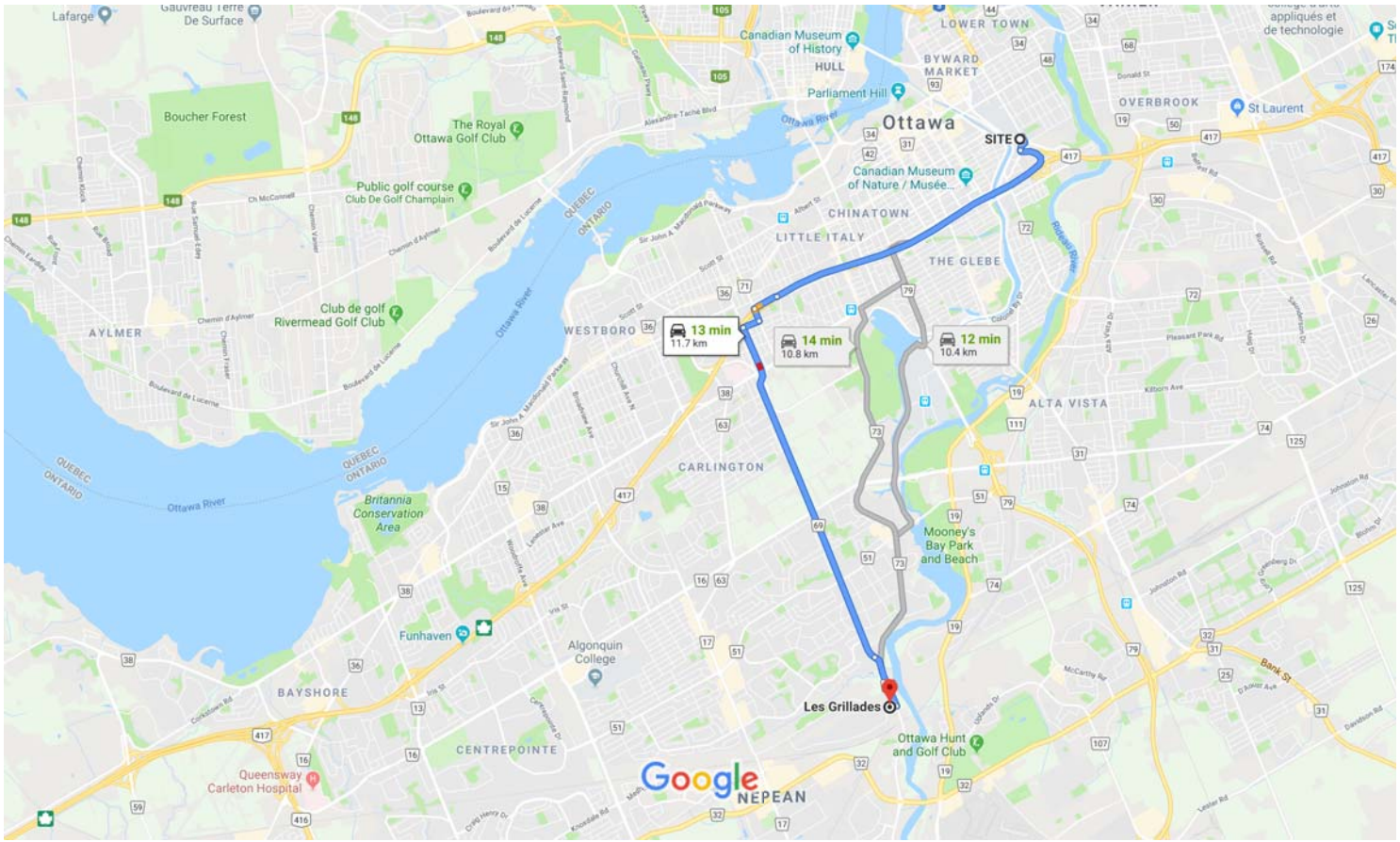


Map data ©2019 Google 100 m

via Colonel By Dr	18 min	1.5 km
via King Edward Ave/Ottawa Regional Rd 99 N and Laurier Ave E/Ottawa Regional Rd 48	21 min	1.7 km
via Louis-Pasteur Private	21 min	1.6 km

All routes are mostly flat

Google Maps SITE, King Edward Avenue, Ottawa, ON to Les Grillades Drive 11.7 km, 13 min



Map data ©2019 Google 1 km

via Trans-Canada Hwy/ON-417 W and Ottawa Regional Rd 69 — 13 min, 11.7 km
Best route

via Colonel By Dr — 12 min, 10.4 km

via Prince of Wales Dr/Route 73 S — 14 min, 10.8 km

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