CURRICULUM VITAE

PERSONAL INFORMATION

Name: Ben NIU.

Gender: Male.

Citizenship: Permanent Resident of the U.S.A.

Highest degree: PhD in Computer Science

Specialty: Artificial Intelligence, Machine Learning, Data Mining, Computational Biology.

CONTACT IFNORMATION

Dr. Ben NIU

Center for Systems Biology

The University of Texas at Dallas

Natural Science and Engineering Research Laboratory (NSERL)

Mail address: Room 4.17, 4/F, Building of NSERL, 800 W. Campbell Road, Richardson, TX 75080

Phone: 1-682-718-1868 (U.S.A.)

Email: ben.niu@utdallas.edu; polyust_niuben@yahoo.com; niuben51266651@gmail.com

EDUCATION EXPERIENCE

February 2004 - February 2008

PhD in Computer Science

Supervisor: Professor Simon C.K. Shiu (Department of Computing, The Hong Kong Polytechnic University, https://www.comp.polyu.edu.hk/en-us/staffs/detail/1259)

Co-supervisor: Professor Sankar Kumar Pal (ISI, https://www.isical.ac.in/~sankar/ , Life Fellow IEEE)

Professor Qiang Yang (Dept. Computer Science and Engineering, HKUST, http://www.cs.ust.hk/~qyang/, Fellow IEEE)

PhD thesis title: Statistical Pattern Recognition: locality preserving embeddings and ensemble of rules

(http://www.sbms.hku.hk/kclab/ben/pdf/THESIS_PHD_NIU_BEN.pdf 172 pages, single line space)

Chairman of Doctoral Oral Defense Exam: Professor Kalyanmoy Deb (Michigan State University, https://www.egr.msu.edu/~kdeb/)

February 2003 -February 2004

Research and Teaching Assistant, Department of Computing, Hong Kong Polytechnic University.

September 1999 - September 2002

Master of Science in Applied Mathematics

School of Mathematics and Computer Sciences, Hebei University.

Supervisor: Professor XiZhao Wang, Fellow IEEE, CAAI Fellow, Editor-in-Chief of Springer Journal Machine Learning and Cybernetics. http://www.hebmlc.org/en/

Master thesis title: The design and implementation of a multi-agent Expert System with Neural-Fuzzy Logic Rules

September 1995 - June 1999

Bachelor of Science in Applied Mathematics, Department of Mathematics, first class honor, Hebei University.

WORKING EXPERIENCE

February, 2020 – Present

Senior Research Scientist, Center of System Biology, The University of Texas at Dallas, U.S.A.

February, 2019 – February, 2020

Postdoctoral Research Fellow, Department of Ophthalmology, The University of Hong Kong.

February 2018 – February 2019

Postdoctoral Research Fellow, Queen Mary Hospital, Li Ka Shing Faculty of Medicine of the University of Hong Kong, The University of Hong Kong.

February 2008 – February 2018

Postdoctoral Research Fellow, School of Biomedical Sciences, The University of Hong Kong.

AWARD

1. F1000Prime recommendation by Professor Philip Maini, director of the Wolfson Centre for Mathematical Biology, University of Oxford.

2. Faculty Outstanding Research Output Award: Li Ka Shing Faculty of Medicine, The University of Hong Kong.

FUNDING

1. Postdoctoral Research Scientist Small Project Research Funding, 66,667 HKD, completed with outstanding items, September, 2010.

2. China Medical Board Research Grant, HKU, 62,465 HKD, completed 2015.

PUBLICATION BY RESEARCH AREA

Journal papers

Computational Biology and Bioinformatics

1. Au, T. Y., Yip, R. K., Wynn, S. L.,…, **Niu B.**, ... & Cheah, K. S.. Hypomorphic and dominant-negative impact of truncated SOX9 dysregulates Hedgehog–Wnt signaling, causing campomelia. **Proceedings of the National Academy of Sciences**, 120(1), e2208623119, **(Impact Factor = 11.2)**, 2023.

2. **Niu, B.,** Bach, T. N., Chen, X., Chandratre, K. R., Murray, J. I., Zhao, Z., & Zhang, M.. Computational modeling and analysis of the morphogenetic domain signaling networks regulating C. elegans embryogenesis**. Computational and Structural Biotechnology Journal**, 20, 3653-3666, **(Impact Factor = 7.3)**, 2022.

3. He, L., Sun, Z., Li, J., Zhu, R., **Niu, B.,** Tam, K. L., ... & Chiu, K.. Electrical stimulation at nanoscale topography boosts neural stem cell neurogenesis through the enhancement of autophagy signaling. **Biomaterials**, 268, 120585, **(Impact Factor = 12.5)**, 2021.

4. Babu, R. O., Lui, V. C. H., Chen, Y., Yiu, R. S. W., Ye, Y., **Niu, B.,** ... & Tam, P. K. H.. Beta-amyloid deposition around hepatic bile ducts is a novel pathobiological and diagnostic feature of biliary atresia. **Journal of Hepatology**, 73(6), 1391-1403, **(Impact Factor = 25.1)**, 2020.

5. Tan, Z., Kong, M., Wen, S., Tsang, K. Y., Niu, B., Hartmann, C., ... & Cheah, K. S.. IRX3 and IRX5 inhibit adipogenic differentiation of hypertrophic chondrocytes and promote osteogenesis. **Journal of Bone and Mineral Research**, 35(12), 2444-2457, **(Impact Factor=5.71), 2020**.

6. Babu, R. O., Lui, V. C. H., Chen, Y., Yiu, R. S. W., Ye, Y., **Niu, B. (Bioinformatics Analyses)**, ... & Tam, P. K. H.. Beta-amyloid deposition around hepatic bile ducts is a novel pathobiological and diagnostic feature of biliary atresia. **Journal of Hepatology**, **(Impact Factor=18.5),** 73(6), 1391-1403, 2020.

7. Feng, C., Chan, W. C., Lam, Y., Wang, X., Chen, P.K., **Niu, B. (Bioinformatics Analyses)**, Ng, V.C.W., Yeo, J.C., Stricker, S., Cheah K.S.E, Koch, M. Mundlos S., Ng, H.H., Chan, D. Lgr5 and Col22a1 Mark Progenitor Cells in the Lineage toward Juvenile Articular Chondrocytes. **Stem Cell report, 13(4), 713-729 (Impact Factor=7.815), 2019**.

8. Ali, S. A., **Niu, B. (co-first author, Bioinformatics Analyses)**, Cheah K.S.E., Alman B.. Unique and overlapping GLI1 and GLI2 transcriptional targets in neoplastic chondrocytes. **PloS One, 14(1), e0211333 (Impact Factor=2.78), 2019.**

9. Wang, C., Tan, Z., **Niu, B. (Bioinformatics Analyses)**, Tsang, K. Y., Tai, A., Chan, W. C., Lo, R. L. K., Leung, K. K. H., Dung, N. W. F., Itoh, N., Zhang, M. Q., Chan, D., Cheah, K. S. E.. Inhibiting the integrated stress response pathway prevents aberrant chondrocyte differentiation thereby alleviating chondrodysplasia. **eLife, 7, e37673 (Impact Factor = 7.62), 2018.**

10. Tan, Z., **Niu, B. (co-first author, Bioinformatics Analyses),** Tsang, K. Y., Melhado, I. G., Ohba, S., He, X., Huang, Y. H., Wang, C., McMahon, A. P., Jauch R., Chan, D., Zhang, M. Q., Cheah, S. E.. Synergistic co-regulation and competition by a SOX9-GLI-FOXA phasic transcriptional network coordinate chondrocyte differentiation transitions. **PLoS Genetics, 14(4), e1007346 (Impact Factor = 6.10), 2018.**

11. Liu, J. A., Rao, Y., Cheung, M. P. L., Hui, M. N., Wu, M. H., Chan, L. K., Ng I.O.L**., Niu, B. (Bioinformatics Analyses)**, Cheah K.S.E., Sharma R., Hodgson L. and Cheung M.C.H.. Asymmetric localization of DLC1 defines avian trunk neural crest polarity for directional delamination and migration. **Nature Communications, 8(1), 1-17 (Impact Factor = 12.35), 2017.**

12. Cheng, C. W., **Niu, B. (co-first author, Bioinformatics Analyses)**, Warren, M., Pevny, L. H., Lovell-Badge, R., Hwa, T., & Cheah, K. S.. Predicting the spatiotemporal dynamics of hair follicle patterns in the developing mouse. **Proceedings of the National Academy of Sciences (PNAS), 111(7), 2596-2601 (Impact Factor = 9.5), 2014.**

Artificial Intelligence

13. **Niu, B.**, Yang, Q., Shiu, S. C. K., & Pal, S. K.. Two-dimensional Laplacianfaces method for face recognition. **Pattern Recognition (PR), 41 (10), 3237-3243 (Impact factor = 4.32), 2008.**

14. Yang, J., Zhang, D., Yang, J. Y., **Niu, B.**. Globally maximizing, locally minimizing: unsupervised discriminant projection with applications to face and palm biometrics. **IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), 29(4), 650-664 (Impact Factor = 9.45), 2007.**

15. **Niu, B.**, Ha, M.H., Wang, X.Z.. The design and implementation of a multi-agent Expert System with Neural-Fuzzy Logic Rules. **Journal of Hebei University (Natural Science Edition), 22(2), 165-169, 2002.**

16. **Niu, B.**, Ha, M.H., Wang, X.Z.. Expert knowledge representation in C++ and Prolog Computer Language. **Journal of Hebei University of Science and Technology, 23(1), 64-69, 2002.**

International Conference papers

Computational Biology and Bioinformatics

17. QIN, Y., Ng, R. K., Ng, T. W., Tong, K. K., Au, Y. K., **Niu, B.**, ... & Cheah, K. S. E. (2017). Genome-wide identification of active enhancers in the developing mouse nucleus pulposus. In 2017 Hong Kong Inter-University Postgraduate Symposium in Biochemical Sciences.

18. Szeto, Y. Y., Wu, M. H., **Niu, B.**, & Cheah, K. S. E. (2017). Regulation of cell fate decision by microRNA in the mesendoderm lineage. GRC Germinal Stem Cells.

19. Szeto, Y. Y., Wu, M. H., **Niu, B.**, & Cheah, K. S. E. (2017). Regulation of cell fate decision by microRNA in the notochordal lineage. GRC Genome Architecture in Cell Fate and Disease.

20. Au, Y. K., Cheah, K. S. E., **Niu, B.**, Chan, D., & Zhang, M. Q. (2016). SPINE-GEL: a global gene expression library for the developing nucleus pulposus. SpineWeek 2016.

21. Liu A.J., Ho S.H., Hui M.N., Cheung M.P.L., Wu M.H., Ho C.K.I., **Niu, B.**, Cheah K.S.E. and Cheung M.C.H., Sox9-dependent pathway in regulating neural crest cell motility, Neural Crest & Cranial Placodes Gordon Research Conference Development, Malformations and Cancers. 2015. (Publication No. : 252701; Publication Date: Jul 2015)

22. Cheah, K. S. E., Wang, C., Tan, Z., **Niu, B.**, Tsang, K. Y., Melhado, I. G., ... & Chan, D. (2012). Transcriptional control of chondrocyte differentiation and their adaptation to ER stress in vivo. In CSHAsia 2012 Conference on Bone & Cartilage: from Development to Human Diseases.

23. **Niu, B.**, Tan, Z., Tsang, K. Y., Melhado, I. G., Chan, D., Zhang, M. Q., & Cheah, K. S. E. (2012). Bioinformatics-aided discovery of transcriptional regulators of chondrocyte differentiation in the growth plate. In Symposium of the Hong Kong Society for Developmental Biology, HKSDB 2012.

24. Cheng, C. C. W., **Niu, B.**, Lovell-Badge, R. H., Hwa, T. T., & Cheah, K. S. E. (2012). Predicting the establishment of hair follicle patterns in the developing mouse. In Symposium of the Hong Kong Society for Developmental Biology, HKSDB 2012.

25. Tan, Z., **Niu, B.**, Tsang, K. Y., Melhado, I. G., Zhang, M., Chan, D., & Cheah, K. S. E. (2011). Integration of factors and pathways facilitating chondrocyte adaptation to ER stress. GRC on Cartilage Biology & Pathology.

26. Cheah, K. S. E., Wang, C., Tan, Z., Melhado, I. G., **Niu, B.**, Tsang, K. Y., ... & Chan, D. (2010). Alleviating ER stress in chondrocytes: survival strategies with double-edged developmental consequences. In Annual Meeting of the Japanese Society of Developmental Biologists, JSDB-43.

27. Cheah, K. S. E., Wang, C., Tan, Z., **Niu, B.**, Tsang, K. Y., Melhado, I. G., ... & Zhang, M. (2010). Genetic and genomic analyses of chondrocyte adaptation to ER stress in vivo. In Meeting of the Federation of European Connective Tissue Societies, FECTS 2010.

28. Cheah, K. S. E., Wang, C., Tan, Z., Melhado, I. G., **Niu, B.**, Tsang, K. Y., ... & Chan, D. (2010). Genetic and genomic analyses of chondrocyte adaptation to ER stress. In Genetics Society 2010 Spring Meeting.

29. Cheah, K. S. E., Tan, Z., **Niu, B.**, Tsang, K. Y., Chan, D., Zhang, M., ... & Wang, C. (2010). Integration of pathways mediating chondrocyte adaptation to ER stress in VIVO. In CSHL Meeting on Mouse Development, Genetics & Genomics.

30. Tan, Z., **Niu, B.**, Tsang, K. Y., Melhado, I. G., Zhang, M., Chan, D., & Cheah, K. S. E. (2010). Global gene expression changes during chondrocyte adaptation to ER stress. In Hong Kong Inter-University 2010 Biochemistry Postgraduate Symposium.

31. Tan, Z., **Niu, B.**, Tsang, K. Y., Melhado, I. G., Chan, D., Cheah, K. S. E., & Zhang, M. (2010). Mechanistic insight into chondrocyte adaptation to ER stress. In Research Postgraduate Symposium, RPS 2010.

32. Tan, Z., **Niu, B.**, Chan, D., & Cheah, K. S. E. (2009). Mechanisms Underlying Chondrocyte Reprogramming Surviving ER Stress. In Research Postgraduate Symposium, RPS 2009.

33. Cheng, C. C. W., Leung, K. K. H., **Niu, B.**, Chan, N. S., & Cheah, K. S. E. (2008). Light coat and circling (LCC) and yellow submarine (YSB) mutants are Sox2 conditional null models during hair morphogenesis. In CSHL Meeting on Mouse Genetics & Genomics. Cold Spring Harbor Laboratory.

Artificial Intelligence

34. **Niu, B.**, Wang, H., Ng, P. H., & Shiu, S. C. (2009, June). A neural-evolutionary model for case-based planning in real time strategy games. In International Conference on Industrial, Engineering and Other Applications of Applied Intelligent Systems (pp. 291-300). Springer, Berlin, Heidelberg, **Lecture Notes in Artificial Intelligence** (LNCS/LNAI) .

35. Huo, P., Shiu, S. C., Wang, H., **& Niu, B.** (2009, August). Application and comparison of particle swarm optimization and genetic algorithm in strategy defense game. In 2009 Fifth International Conference on Natural Computation (pp. 387-392). **Proceeding indexed by IEEE**.

36. Huo, P., Shiu, S. C. K., Wang, H., & **Niu, B.** (2009, December). Case indexing using PSO and ANN in real time strategy games. In International Conference on Pattern Recognition and Machine Intelligence (pp. 106-115). Springer, Berlin, Heidelberg, **Lecture Notes in Computer Science (LNCS)**.

37. Wang, H., Ng, P. H., **Niu, B.**, & Shiu, S. C. (2009, August). Case learning and indexing in real time strategy games. In Natural Computation, 2009. ICNC'09. Fifth International Conference (Vol. 1, pp. 100-104). **Proceeding indexed by IEEE**.

38. **Niu, B.**, Shiu, S. C. K., & Pal, S. (2009, December). Mutual neighborhood based discriminant projection for face recognition. In International Conference on Pattern Recognition and Machine Intelligence (pp. 440-445). Springer, Berlin, Heidelberg, **Lecture Notes in Computer Science (LNCS)**.

39. **Niu, B.**, N., Yang, Q., Li, J., Chi-keung, S., & Pal, S. (2007, December). Discovering patterns of DNA methylation: rule mining with rough sets and decision trees, and comethylation analysis. In International Conference on Pattern Recognition and Machine Intelligence (pp. 389-397). Springer, Berlin, Heidelberg, **Lecture Notes in Computer Science (LNCS)**.

40. **Niu, B.**, Yang, Q., Li, J., Xue, H., Shiu, S., Liu, H., & Pal, S. K. (2007). Pattern Detection and Co-methylation Analysis of Epigenetic Features in Human Embryonic Stem Cells. In International Conference on BioInformatics (**Incob**), 2007.

41. **Niu, B.**, Shiu, S. C. K., & Pal, S. K. (2006, November). Two dimensional laplacianfaces method for face recognition. In International Conference on Rough Sets and Current Trends in Computing (pp. 852-861). Springer, Berlin, Heidelberg, **Lecture Notes in Computer Science (LNCS/LNAI)**.

42. **Niu, B.**, & Shiu, S. C. (2005, September). Using similarity measure to enhance the robustness of web access prediction model. In International Conference on Knowledge-Based and Intelligent Information and Engineering Systems (pp. 107-111). Springer, Berlin, Heidelberg, **Lecture Notes in Computer Science (LNCS)**.

43. **Niu, B.**, Shiu, S. C. K., & Pal, S. K. (2005, December). A novel 3D face recognition algorithm using template based registration strategy and artificial neural networks. In International Conference on Pattern Recognition and Machine Intelligence (pp. 315-317). Springer, Berlin, Heidelberg, **Lecture Notes in Computer Science (LNCS)**.

Invited lectures and keynote speeches

44. Liu A.J., RAO Y., Cheung M.P.L., Hui M.N., Wu M.H., **Niu, B.**, Chan L.K., Cheah /K.S.E. and Cheung M.C.H., Coordinated action of Nedd9 and Dlc1 in neural crest motility, Proceedings of Avian Model Systems 9: A New Integrative Platform. 2016. (Publication No. : 259888; Publication Date: Mar 2016)

45. Cheung M.C.H., HO S.H., Hui M.N., Wu M.H., Cheung M.P.L., Ho C.K.Y., **Niu, B.**, Cheah K.S.E. and LIU A., Sox9 and the Molecular Network Regulating Neural Crest Cell Motility, 2014 International SOX Research Conference. 2014. (Publication No. : 234935; Publication Date: Sep 2014)

46. Cheah K.S.E., Wang C., Tan Z., **Niu, B.**, Tsang K.Y., Melhado I.G., Zhong M. and Chan D., Transcriptional control of chondrocyte differentiation and their adaptation to ER stress in vivo, Cold Spring Harbor Asia Meeting on " Bone and Cartilage: from Development to Human Diseases , Suzhou, China, 11-15 June, 2012. (Publication No. : 200583; Publication Date: Jun 2012)

47. Cheah K.S.E., Wang C., Tan Z., **Niu, B.**, Tsang K.Y., Melhado I.G., Zhang M.Q. and Chan D., Genetic control of chondrocyte adaptation to ER stress in chondrodysplasia , Hong Kong Society for Developmental Biology Symposium : From Embryology to Disease Mechanism, November 26-26, 2012. (Publication No. : 213072; Publication Date: Nov 2012)

PhD THESIS

48. Statistical Pattern Recognition: locality preserving embeddings and ensemble of rules, Hong Kong Polytechnic University, Hong Kong S.A.R., China, January 2008. Supervisor: Professors Simon C.K. Shiu, Co-supervisor: Professor Sankar Kumar Pal, Professor Qiang Yang. (https://www.lib.polyu.edu.hk/bib/b2233753)

BOOK (Appendix Chapters A to D)

49. Foundations of Soft Case-Based Reasoning, by Sankar K. Pal and Simon C.K. Shiu, John Wiley & Sons, 2004, ISBN: 0-471-08635-5.

    "The book is must reading for anyone who is interested in the conception, design and utilization of intelligent systems." - from the Foreword by **Lotfi A. Zadeh** *(founder of fuzzy logic), University of California, Berkeley*

Invited journal reviewer and review editorship

Artificial Intelligence

International Journal of Machine Learning and Cybernetics

International Journal of Pattern Recognition and Artificial Intelligence

International Journal of Pattern Recognition

IEEE Transactions on Fuzzy Systems

Computational Biology

BMC Bioinformatics

PloS One

Computers in Biology and Medicine

Open Biology

BioScience Report

Computational Genomics