# Riqiang Gao, Ph.D. candidate

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## Research Interest

2015–now    ▮ I am broadly interested in artifical intelligence, especially its applications in healthcare. I have focused on face recognition during the master period in Tsinghua. I'm exploring lung cancer risk estimation with imperfect longitudinal multi-modal data in Vanderbilt, advised by Prof. Bennett Landman.

## Education

| Degree | Major | University | Period | GPA rank |
|:---:|:---:|:---:|:---:|:---:|
| B.E. | Communication Eng. | Central South University | 09/2011 - 07/2015 | 2 / 163 |
| M.E. | Electronics Eng. | Tsinghua University | 09/2015 - 07/2018 | 2 / 54 |
| Ph.D. | Computer Sci. | Vanderbilt University | 08/2018 - 05/2022 (expected) | N/A |

## Selected Honors & Awards

2021    ▮ C.F. Chen Best Paper Award (with 5,000 USD), Vanderbilt University (first-author)

▮ RFW Best Student Paper Award Finalist, SPIE-MI 2021 (first-author) ($< 2\%$)

2020    ▮ RFW Best Student Paper Award Finalist, SPIE-MI 2020 (first-author) ($< 2\%$)

▮ Honorable Mention Poster Award, SPIE-MI 2020 (Mentor & Presenter) ($< 5\%$)

2015    ▮ Member of Outstanding Deeds Report ( 10 selected across all majors,$< 0.5\%$)

▮ Outstanding Graduate in Hunan Province, China (2%)

2014    ▮ Meritorious in Mathematical Contest in Modeling of USA (team-leader) (10%)

▮ Pacemaker to Merit Student of CSU ( 30 selected across all majors, $< 0.5\%$)

2013    ▮ First Prize in National Mathematics Competitions (not-math-major) of China (Rank 17 in China, Rank 1 in Hunan Province, $<0.02\%$)

2012 – now    ▮ Scholarships including Outstanding Scholarship (CSU, $<1\%$), National Scholarship (CSU, $< 2\%$), First Prize Scholarship (THU, 10%), University Graduate Fellowship (VU).

## Research Experiences

09/2015 – 06/2018    ▮ Research Assistant, *Face Recognition*, Tsinghua University

06/2017 – 09/2017    ▮ Research Internship, *Clothes Detection*, YouTu X-Lab of Tencent

03/2018 – 06/2018    ▮ Research Internship, *Whole Slide Image Analysis*, Imsight Technology

05/2021 – Now    ▮ Research Internship, *Anomaly Detection in Healthcare*, Siemens Healthineers

08/2018 – Now    ▮ Research Assistant, *Lung Cancer Risk Estimation*, Vanderbilt University

## Selected Accepted/Published Publications (Contact Author *)

## Journal Articles

**1**   **Gao, Riqiang**, Huo, Y., Bao, S., Tang, Y., Antic, S. L., Epstein, E. S., Deppen, S., Paulson, A. B., Sandler, K. L., Massion, P. P., & Landman, B. A. (2020). Multi-path xd recurrent neural networks for collaborative image classification. *Neurocomputing*.

**2**   **Gao, Riqiang**, Tang, Y., Xu, K., Huo, Y., Bao, S., Antic, S. L., Epstein, E. S., Deppen, S., Paulson, A. B., Sandler, K. L., & Landman, B. A. (2020). Time-distanced gates in long short-term memory networks. *Medical Image Analysis* **(C.F. Chen best paper (VU))**.

**3**   **Gao, Riqiang**, Yang, F., Yang, W., & Liao, Q. (2018). Margin loss: Making faces more separable. *IEEE Signal Processing Letters*, *25*(2), 308–312.

**4**   Yang, F., Yang, W., **Gao, Riqiang**, & Liao, Q. (2017). Discriminative multidimensional scaling for low-resolution face recognition. *IEEE Signal Processing Letters*, *25*(3), 388–392.

**5**   Yang, W., **Gao, Riqiang** *, & Liao, Q. (2017). Weighted voting of discriminative regions for face recognition. *IEICE TRANSACTIONS on Information and Systems*, *100*(11), 2734–2737.

**6**   Tang, Y., **Gao, Riqiang**, Han, S., Chen, Y., Gao, D., Nath, V., Bermudez, C., Savona, M. R., Abramson, R. G., Bao, I., Shunxing Lyu, Huo, Y., & Landman, B. A. (2020a). High-resolution 3d abdominal segmentation with random patch network fusion. *Medical Image Analysis*.

## Conference Proceedings

**1**   **Gao, Riqiang**, Tang, Y., Xu, K., Kammer, M. N., Antic, S. L., Deppen, S., Sandler, K. L., Massion, P. P., Huo, Y., & Landman, B. A. (2021). Deep multi-path network integrating incomplete biomarker and chest ct data for evaluating lung cancer risk, In *Medical imaging: Image processing*. SPIE **(RFW all-conference best paper finalist)**.

**2**   **Gao, Riqiang**, Tang, Y., Xu, K., Lee, H. H., Deppen, S., Sandler, K., Massion, P. P., Lasko, T., & Landman, B. A. (2021). Lung cancer risk estimation with incomplete data: A joint missing imputation perspective. MICCAI **(early accepted)**.

**3**   **Gao, Riqiang**, Li, L., Tang, Y., Antic, S. L., Paulson, A. B., Huo, Y., Sandler, K. L., Massion, P. P., & Landman, B. A. (2020). Deep multi-task prediction of lung cancer and cancer-free progression from censored heterogenous clinical imaging, In *Medical imaging: Image processing*. SPIE **(RFW all-conference best paper finalist)**.

**4**   Yang, Y., **Gao, Riqiang** *, Tang, Y., Antic, S. L., Deppen, S., Huo, Y., Sandler, K. L., Massion, P. P., & Landman, B. A. (2020). Internal-transfer weighting of multi-task learning for lung cancer detection, In *Medical imaging: Image processing*. SPIE **(Honorable Mentioned Poster, * denotes Mentor)**.

**5**   **Gao, Riqiang**, Huo, Y., Bao, S., Tang, Y., Antic, S. L., Epstein, E. S., Balar, A. B., Deppen, S., Paulson, A. B., Sandler, K. L. Et al. (2019). Distanced lstm: Time-distanced gates in long short-term memory models for lung cancer detection. MICCAI-MLMI **(oral)**.

**6**   **Gao, Riqiang**, Yang, W., Hu, X., & Liao, Q. (2016). Two-stage patch-based sparse multi-value descriptor for face recognition, In *Visual communications and image processing (vcip)*, IEEE.

**7**   Yang, W., **Gao, Riqiang** *, Xu, Y., Sun, X., & Liao, Q. (2016). Discriminative patch-based sparse representation for face recognition, In *2016 ieee international conference on signal processing, communications and computing (icspcc)*. IEEE.

**8**   **Gao, Riqiang**, Yang, W., Sun, X., Li, H., & Liao, Q. (2015). Locally collaborative representation in similar subspace for face recognition, In *Chinese conference on biometric recognition*. Springer.

## Academic Activities

Reviewer    Transactions on Medical Imaging (TMI)
Journal of Biomedical and Health Informatics (JBHI)
PLOS One
Research in Computational Molecular Biology (RECOMB2020)
Cancers (co-reviewed with Dr. Pierre Massion)

Program Committee    ICCV2021 Workshop on Computer Vision for Automated Medical Diagnosis
ICML 2021 Workshop Interpretable ML in Healthcare

## Mentored Undergraduates

01/2019 - 06/2019    Yiyuan Yang. First Job: Engineer in Facebook.

07/2019 - 09/2019    Lingfeng Li. First Job: MS student in Northwestern University.

01/2020 - 05/2020    Xinmeng Zhang. First Job: Ph.D. student in Vanderbilt University.