Stanford

Bao Do

Clinical Professor, Radiology

CLINICAL OFFICE (PRIMARY)

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Bio

BIO

Bao Do is an expert in radiology informatics, computer vision, and quantitative musculoskeletal imaging. He has developed and validated deep-learning models for diagnostic interpretation, hardware recognition, and automated reporting across orthopedic and radiographic domains. His recent studies demonstrated high-performance CNNs for detecting perilunate and lunate dislocations on wrist radiographs (AUC = 0.986) #Pridgen et al., Plast Reconstr Surg 2023; 10.1097/PRS.0000000000010928# and improving clinician accuracy through machine-learning-assisted diagnosis in a multicenter reader study #Luan et al., Hand (N Y)2025; 10.1177/15589447241308603#. He co-developed AI systems for automated classification of hip hardware achieving radiologist-level accuracy (AUC ≥ 0.99) #Ma et al., J Imaging Informat Med 2024; 10.1007/s10278-024-01263-y#, scoliosis curvature measurement from 2,150 spine radiographs #Ha et al., J Digit Imaging 2022; 10.1007/s10278-022-00595-x#, and fully automated leg-length analysis and reporting #Larson et al., J Digit Imaging2022; 10.1007/s10278-022-00671-2#. Earlier work included Bayesian models for bone tumor diagnosis #Do et al., J Digit Imaging 2017; 30:709-13#, semantic content-based image retrieval using relevance feedback #Banerjee et al., J Biomed Inform 2018; 84:123-35#, and NLP-based uncertainty detection in radiology reports #Callen et al., J Digit Imaging 2020; 33:1209-19#, demonstrating a career-long commitment to explainable, data-driven imaging analytics.

Interests: Automation in medicine, quantitative MSK AI, MSK tumor AI, AI in workflow, and computer systems in education, QC, research

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CLINICAL FOCUS

- Diagnostic Radiology
- Diagnostic Radiology, Sports Imaging, Musculoskeletal Radiology, AI for tumor imaging, workflow efficiency, operations and education

ACADEMIC APPOINTMENTS

- Clinical Professor, Radiology

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Chair, AI Committee, Society of Skeletal Radiology (SSR) (2026 - present)
- Co-chair, VISN21 Radiology AI CoP, VISN21, Department of Veterans Affairs (2025 - present)

- Co-director, Radiology residency AI track, Stanford (2024 - present)
- VISN21 Chief of Radiology Informatics, Department of Veterans Affairs (2022 - 2025)
- VISN21 ICC Lead Radiologist, Department of Veterans Affairs (2021 - 2025)

PROFESSIONAL EDUCATION

- Medical Education: University of Illinois at Chicago College of Medicine (2005) IL
- Fellowship: Stanford University Radiology Fellowships (2012) CA
- Fellowship: Stanford University Radiology Fellowships (2011) CA
- Board Certification: Diagnostic Radiology, American Board of Radiology (2010)
- Residency: Stanford University Radiology Residency (2010) CA
- Residency: University of Iowa Hospitals and Clinics (2008) IA
- Internship: Santa Clara Valley Medical Center Internal Medicine Residency (2006) CA

PATENTS

- Yeluri, V., Arlagada, V., Do, B., Beaulieu, C.. "United States Patent 0006926 Systems and methods for natural language processing to provide smart links in radiology reports", GE Healthcare, Jan 2, 2014

LINKS

- Research: stanford.edu/~baodo

Publications

PUBLICATIONS

- **Purchasing and Using an Artificial Intelligence Algorithm for Fracture Detection: Point-One of the Most Justifiable and Mature Applications in Radiology Today.** *AJR. American journal of roentgenology*
  Do, B. H., Beaulieu, C. F.
  2026

- **Creation of Radiology Teaching Content with STELLA-A STandardized Electronic Learning Library and Application Platform.** *Academic radiology*
  Beaulieu, C. F., Do, B., Lin, M., Zandee van Rilland, E., Rigas, A., Alkim, E., Yurtsever, O., Robertson, J., Wang, S., Rubin, D. L.
  2025

- **Machine Learning-Aided Diagnosis Enhances Human Detection of Perilunate Dislocations.** *Hand (New York, N.Y.)*
  Luan, A., von Rabenau, L., Serebrakian, A. T., Crowe, C. S., Do, B. H., Eberlin, K. R., Chang, J., Pridgen, B. C.
  2025: 15589447241308603

- **Deep Learning for Automated Classification of Hip Hardware on Radiographs.** *Journal of imaging informatics in medicine*
  Ma, Y., Bauer, J. L., Yoon, A. H., Beaulieu, C. F., Yoon, L., Do, B. H., Fang, C. X.
  2024

- **Automatic Detection of Perilunate and Lunate Dislocations on Wrist Radiographs Using Deep Learning.** *Plastic and reconstructive surgery*
  Pridgen, B., von Rabenau, L., Luan, A., Gu, A. J., Wang, D. S., Langlotz, C., Chang, J., Do, B.
  2023

- **Artificial Intelligence System for Automatic Quantitative Analysis and Radiology Reporting of Leg Length Radiographs.** *Journal of digital imaging*
  Larson, N., Nguyen, C., Do, B., Kaul, A., Larson, A., Wang, S., Wang, E., Bultman, E., Stevens, K., Pai, J., Ha, A., Boutin, R., Fredericson, et al
  2022

- **Automating Scoliosis Measurements in Radiographic Studies with Machine Learning: Comparing Artificial Intelligence and Clinical Reports.** *Journal of digital imaging*
  Ha, A. Y., Do, B. H., Bartret, A. L., Fang, C. X., Hsiao, A., Lutz, A. M., Banerjee, I., Riley, G. M., Rubin, D. L., Stevens, K. J., Wang, E., Wang, S., Beaulieu, et al

2022

- **Between Always and Never: Evaluating Uncertainty in Radiology Reports Using Natural Language Processing.** *Journal of digital imaging*
  Callen, A. L., Dupont, S. M., Price, A., Laguna, B., McCoy, D., Do, B., Talbott, J., Kohli, M., Narvid, J.
  2020

- **Automatic Extraction of Skeletal Maturity from Whole Body Pediatric Scoliosis X-rays Using Regional Proposal and Compound Scaling Convolutional Neural Networks**
  Ha, A., Vorhies, J., Campion, A., Fang, C., Fadell, M., Dou, S., Halabi, S., Larson, D., Wang, E., Lee, Y., Langner, J., Kaur, J., Do, et al
  edited by Park, T., Cho, Y. R., Hu, Yoo, Woo, H. G., Wang, J., Facelli, J., Nam, S., Kang, M.
  IEEE COMPUTER SOC.2020: 996-1000

- **Deep-Learning for Automated Classification of Inferior Vena Cava Filter Types on Radiographs.** *Journal of vascular and interventional radiology : JVIR*
  Ni, J. C., Shpanskaya, K., Han, M., Lee, E. H., Do, B. H., Kuo, W. T., Yeom, K. W., Wang, D. S.
  2019

- **MRI UTE-T2*shows high incidence of cartilage subsurface matrix changes 2 years after ACL reconstruction** *JOURNAL OF ORTHOPAEDIC RESEARCH*
  Williams, A. A., Titchenal, M. R., Do, B. H., Guha, A., Chu, C. R.
  2019; 37 (2): 370–77

- **Relevance feedback for enhancing content based image retrieval and automatic prediction of semantic image features: Application to bone tumor radiographs** *JOURNAL OF BIOMEDICAL INFORMATICS*
  Banerjee, I., Kurtz, C., Devorah, A., Do, B., Rubin, D. L., Beaulieu, C. F.
  2018; 84: 123–35

- **MRI UTE-T2* Shows High Incidence of Cartilage Subsurface Matrix Changes 2 Years After ACL Reconstruction.** *Journal of orthopaedic research : official publication of the Orthopaedic Research Society*
  Williams, A. A., Titchenal, M. R., Do, B. H., Guha, A., Chu, C. R.
  2018

- **Relevance Feedback for Enhancing Content Based Image Retrieval and Automatic Prediction of Semantic Image Features: Application to Bone Tumor Radiographs.** *Journal of biomedical informatics*
  Banerjee, I. n., Kurtz, C. n., Edward Devorah, A. n., Do, B. n., Rubin, D. L., Beaulieu, C. F.
  2018

- **Detection of nociceptive-related metabolic activity in the spinal cord of low back pain patients using (18)F-FDG PET/CT.** *Scandinavian journal of pain*
  Zhou, X. n., Cipriano, P. n., Kim, B. n., Dhatt, H. n., Rosenberg, J. n., Mittra, E. n., Do, B. n., Graves, E. n., Biswal, S. n.
  2017; 15: 53–57

- **Bone Tumor Diagnosis Using a Naïve Bayesian Model of Demographic and Radiographic Features.** *Journal of digital imaging*
  Do, B. H., Langlotz, C. n., Beaulieu, C. F.
  2017

- **Mechanically stimulated biomarkers signal cartilage changes over 5 years consistent with disease progression in medial knee osteoarthritis patients.** *Journal of orthopaedic research : official publication of the Orthopaedic Research Society*
  Chu, C. R., Sheth, S. n., Erhart-Hledik, J. C., Do, B. n., Titchenal, M. R., Andriacchi, T. P.
  2017

- **Comparing image search behaviour in the ARRS GoldMiner search engine and a clinical PACS/RIS** *JOURNAL OF BIOMEDICAL INFORMATICS*
  De-Arteaga, M., Eggel, I., Do, B., Rubin, D., Kahn, C. E., Mueller, H.
  2015; 56: 57-64

- **Classification of Hypervascular Liver Lesions Based on Hepatic Artery and Portal Vein Blood Supply Coefficients Calculated from Triphasic CT Scans** *JOURNAL OF DIGITAL IMAGING*
  Boas, F. E., Kamaya, A., Do, B., Desser, T. S., Beaulieu, C. F., Vasanawala, S. S., Hwang, G. L., Sze, D. Y.
  2015; 28 (2): 213-223

- **MR Imaging Near Metallic Implants Using MAVRIC SL: Initial Clinical Experience at 3T** *ACADEMIC RADIOLOGY*
  Gutierrez, L. B., Do, B. H., Gold, G. E., Hargreaves, B. A., Koch, K. M., Worters, P. W., Stevens, K. J.
  2015; 22 (3): 370-379
- **Optimal imaging surveillance schedules after liver-directed therapy for hepatocellular carcinoma.** *Journal of vascular and interventional radiology*
  Boas, F. E., Do, B., Louie, J. D., Kothary, N., Hwang, G. L., Kuo, W. T., Hovsepian, D. M., Kantrowitz, M., Sze, D. Y.
  2015; 26 (1): 69-73
- **Quantitative Magnetic Resonance Imaging UTE-T2* Mapping of Cartilage and Meniscus Healing After Anatomic Anterior Cruciate Ligament Reconstruction.** *American journal of sports medicine*
  Chu, C. R., Williams, A. A., West, R. V., Qian, Y., Fu, F. H., Do, B. H., Bruno, S.
  2014; 42 (8): 1847-1856
- **Quantitative Magnetic Resonance Imaging UTE-T2*Mapping of Cartilage and Meniscus Healing After Anatomic Anterior Cruciate Ligament Reconstruction** *AMERICAN JOURNAL OF SPORTS MEDICINE*
  Chu, C. R., Williams, A. A., West, R. V., Qian, Y., Fu, F. H., Do, B. H., Bruno, S.
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- **Automatic Retrieval of Bone Fracture Knowledge Using Natural Language Processing** *JOURNAL OF DIGITAL IMAGING*
  Do, B. H., Wu, A. S., Maley, J., Biswal, S.
  2013; 26 (4): 709-713
- **Pattern of 18F-FDG Uptake in the Spinal Cord in Patients With Non-Central Nervous System Malignancy** *SPINE*
  Do, B. H., Mari, C., Tseng, J. R., Quon, A., Rosenberg, J., Biswal, S.
  2011; 36 (21): E1395-E1401
- **Evaluation of Negation and Uncertainty Detection and its Impact on Precision and Recall in Search** *JOURNAL OF DIGITAL IMAGING*
  Wu, A. S., Do, B. H., Kim, J., Rubin, D. L.
  2011; 24 (2): 234-242
- **Informatics in Radiology RADTF: A Semantic Search-enabled, Natural Language Processor-generated Radiology Teaching File** *RADIOGRAPHICS*
  Do, B. H., Wu, A., Biswal, S., Kamaya, A., Rubin, D. L.
  2010; 30 (7): 2039-2048
- **Diagnosis of aseptic deep venous thrombosis of the upper extremity in a cancer patient using fluorine-18 fluorodeoxyglucose positron emission tomography/computerized tomography (FDG PET/CT)** *ANNALS OF NUCLEAR MEDICINE*
  Do, B., Mari, C., Biswal, S., Kalinyak, J., Quon, A., Gambhir, S. S.
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- **The role of selection in the evolution of human mitochondrial genomes** *GENETICS*
  Kivisild, T., Shen, P. D., Wall, D. P., Do, B., Sung, R., Davis, K., Passarino, G., Underhill, P. A., Scharfe, C., Torroni, A., Scozzari, R., Modiano, D., Coppa, et al
  2006; 172 (1): 373-387
- **Conservation of the RBI gene in human and primates (vol 25, pg 396, 2005)** *HUMAN MUTATION*
  Sivakumaran, T. A., Shen, P. D., Wall, D. P., Do, B. H., Kucheria, K., Oefner, P. J.
  2005; 25 (5): 501
- **Conservation of the RB1 gene in human and primates** *HUMAN MUTATION*
  Sivakumaran, T. A., Shen, P. D., Wall, D. P., Do, B. H., Kucheria, K., Oefner, P. J.
  2005; 25 (4): 396-409
- **A tRNA(Ala) mutation causing mitochondrial myopathy clinically resembling myotonic dystrophy** *JOURNAL OF MEDICAL GENETICS*
  Horvath, R., Lochmuller, H., Scharfe, C., Do, B. H., Oefner, P. J., Muller-Hocker, J., Schoser, B. G., Pongratz, D., Auer, D. P., Jaksch, M.
  2003; 40 (10): 752-757
- **Analysis of FAS (CD95) gene mutations in higher-grade transformation of follicle center lymphoma** *LEUKEMIA & LYMPHOMA*
  Do, B., Lossos, I. S., Thorstenson, Y., Oefner, P. J., Levy, R.

2003; 44 (8): 1317-1323

- **Childhood onset mitochondrial myopathy and lactic acidosis caused a stop mutation in the mitochondrial cytochrome c oxidase III gene** *JOURNAL OF MEDICAL GENETICS*

  Horvath, R., Scharfe, C., Hoeltzenbein, M., Do, B. H., Schroder, C., Warzok, R., Vogelgesang, S., Lochmuller, H., Muller-Hocker, J., Gerbitz, K. D., Oefner, P. J., Jaksch, M.

  2002; 39 (11): 812-816

- **Analysis of FAS (CD95) gene mutations in higher-grade transformation of follicle center lymphoma (FCL).**

  Lossos, I. S., Do, B., Thorstenson, Y., Oefner, P. J., Levy, R.

  AMER SOC HEMATOLOGY.2001: 332A