

Birhanu Hailu Belay

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Data of Birth: 16.08.1988

Research Interest and Experience

Deep learning, Computer Vision and Image process, Document Image Analysis, Natural Language Processing, Multitask Learning and multi-modal data processing.

Education

- Oct 2017 – Feb 2021 **Ph.D., Technische Universität Kaiserslautern**, Computer Science, Intelligent systems.
- Thesis title: *Deep learning for Amharic Text-image Recognition: Algorithm, Dataset and Application*
- Sept 2013 – Oct 2015 **M.Sc., Bahir Dar Institute of Technology**, Computer Science, Image Processing.
- Thesis title: *Applying Image Processing Techniques for Malt-barley Seed Identification.*
- Sept 2007 – Jul 2010 **B.Sc., Wollo University**, Information Communication Technology.
- Project title: *A web-based Patient Information management System for Bati General hospital.*

Work Experience

- Since Feb 2021– **Assistant Professor**, Bahir Dar Institute of Technology, Computing Faculty, Bahir Dar, Ethiopia.
- Teaching experience: Machine learning, Data mining courses for Masters students)
- Oct 2017 – Jun 2020 **Visiting researcher**, Augmented Vision Lab, DFKI-Kaiserslautern, Germany.
- Using Attention mechanisms for sequential data analysis and recognition.
- Multi-task learning for character recognition and language identification.
- Text-image dataset annotation (<http://www.dfki.uni-kl.de/~belay/>)
- Applying deep learning (such as CNN, LSTM and CTC) algorithms for spatio-temporal pattern recognition:
 - Text-image recognition, document image analysis & document classification and image processing
- Oct 2015 – Sept 2017 **Lecturer, Head of Data and information management**, Bahir Dar Institute of Technology, Bahir Dar, Ethiopia
- Coordinating and working with a research team
- Research in the area of image processing and pattern recognition
- Teaching experience: Database and programming courses for undergraduate student)
- Feb 2013 – Aug 2013 **Assistant Lecturer** Bahir Dar Institute of Technology, Bahir Dar, Ethiopia
- Teaching experience: Database and programming courses for undergraduate students)

Work Experience (continued)

- Sept 2011 – Jan 2013 **Assistant Lecturer** Debretabor University, Debretabor, Ethiopia
-Teaching experience: Database and programming courses for undergraduate students)
- Sept 2010 – Aug 2011 **Graduate Assistant** Arba Minch University, Arba Minch, Ethiopia
- Preparing Laboratory manuals and assisting laboratory classes of database and programming courses

Research Publications

Journal Articles

- 1 **Belay, Birhanu Hailu**, Belete, B., & Gebeyehu, B. (2021). Factorized Recurrent Neural Network with Attention for Language Identification and Content Detection. *Journal of Natural Language Engineering [Under review]*.
- 2 **Belay, Birhanu Hailu**, Habtegebrial, T., Meshesha, M., Liwicki, M., Belay, G., & Stricker, D. (2020b). Amharic OCR: An End-to-End Learning. *MDPI-Applied Sciences*, 10(3), 1117.
- 3 Gebremeskel, G. B., **Belay, Birhanu Hailu**, & Biazen, B. (2019). Architecture and optimization of data mining modeling for visualization of knowledge extraction: Patient safety care. *Journal of King Saud University-Computer and Information Sciences*.

Conference Proceedings

- 1 **Belay, Birhanu Hailu**, Habtegebrial, T., Meshesha, M., Belay, G., Liwicki, M., & Stricker, D. Learning by injection: Attention embedded recurrent neural network for amharic text-image recognition. In: MDPI-Preprints.
- 2 **Belay, Birhanu Hailu**, Habtegebrial, T., Liwicki, M., Belay, G., & Stricker, D. **Blended Attention-CTC network Architecture for Amharic Text-image Recognition**. In: *2021 international conference on pattern recognition*. (ICPRAM), INSTICC. 2021.
- 3 **Belay, Birhanu Hailu**, Habtegebrial, T., Belay, G., & Stricker, D. Using automatic features for text-image classification in amharic documents. In: *Proceedings of the 9th international conference on pattern recognition applications and methods - volume 1*, (ICPRAM-2020). SciTePress, 2020, 440–445.
- 4 **Belay, Birhanu Hailu**, Habtegebrial, T., Liwicki, M., Belay, G., & Stricker, D. **Amharic Text Image Recognition: Database, Algorithm, and Analysis**. In: *2019 international conference on document analysis and recognition*. (ICDAR-2019),IEEE. 2019, 1268–1273.
- 5 **Belay, Birhanu Hailu**, Habtegebrial, T., Liwicki, M., Belay, G., & Stricker, D. **Factored Convolutional Neural Network for Amharic Character Image Recognition**. In: *2019 IEEE international conference on image processing*. (ICIP-2019)IEEE. 2019, 2906–2910.
- 6 **Belay, Birhanu Hailu**, Habtegebrial, T. A., & Stricker, D. Amharic character image recognition. In: *2018 IEEE 18th international conference on communication technology*. (ICCT-2018)IEEE. 2018, 1179–1182.
- 7 **Belay, Birhanu Hailu**, Habtegebrial, T., Belay, G., & Stricker, D. Multi-font printed amharic character image recognition: Deep learning techniques. In: *International conference on advances of science and technology*. ICAST-2018. 2018, 322–331.
- 8 **Belay, Birhanu Hailu**, & Meshesha, M. Applying image processing for malt-barley seed identification. In: *In conference: Ethiopian the 9th ict annual conference*. 2016.

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Belay, Birhanu Hailu, & Tegegne, T. Ethiopian roasted coffee classification using imaging techniques.
In: *International conference on advances of science and technology*. 2015.

Project

- DeepOCR: Deep learning-based OCR for Amharic Script recognition [Completed]
- HisEMR: Historical Ethiopic Manuscript Recognition[Ongoing]

Skills

Languages	📌 Excellent command of English and Amharic.
DL Frameworks	📌 keras, Tensorflow
Coding	📌 Python, C++, Java, SQL
Databases	📌 MySQL, Microsoft SQL Server
Web Dev	📌 HTML, CSS, JavaScript, JSP.
Operating Systems.	📌 Linux and Windows operating system
Other Skills.	📌 Academic research, teaching, training, and management.

Miscellaneous

Awards and Scholarships

Apr 2020- Jun 2020	📌 TU-Kaiserslautern Computer Science Dept. scholarship award
Sept, 2019	📌 Google conference travel scholarship Award
	📌 IEEE Signal processing Society Travel Grant Award
Oct 2017- Mar 2020	📌 DAAD Research Visit Scholarship Award

References

Tewodros Habtegebrial

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