

Deborah Washington Brown

Introduction

Deborah Washington Brown, (June 3, 1952 - June 5, 2020), born Deborah Blanche Washington, was an American computer scientist, American inventor, and speech recognition researcher who worked at AT&T Bell Labs and other companies for many years doing speech recognition research. She was the first black woman to earn a doctorate in Computer Science at Harvard University (John A. Paulson School of Engineering and Applied Sciences and Graduate School of Arts and Sciences) in 1981. She was one of the first black female computer scientists to graduate from a U.S. doctoral program.¹ She has 11 patents attached to her name and is the sole inventor of Natural Language Call Router, an AI-driven call router that forwards an incoming call from a caller to an appropriate destination.²

Early Life and Education

Born as Deborah Blanche Washington on June 3, 1952 in Washington D. C., Brown was the youngest of 4 children (with a twin brother Melvin Charles Washington) of Edwin and Lola Washington. She attended high school at the National Cathedral School 1966–70. She was

¹ *Alumni profile: Deborah Washington Brown, Ph.D. '81.* (2020, June 24). SEAS Harvard.

Retrieved December 6, 2021, from <https://www.seas.harvard.edu/news/2020/06/alumni-profile-deborah-washington-brown-phd-81>

² U. (2015, January 27). *Natural language call router.* USPTO.Report. Retrieved December 6, 2021, from <https://uspto.report/patent/grant/8,942,981>

admitted to the New England Conservatory of Music in 1970 to pursue her dream of becoming a classical pianist but left in 1971 for Lowell Technological Institute after being dissuaded about her prospects. She received a bachelor's degree with honors in mathematics at Lowell in 1975. She received a Master's (1977) and a PhD (1981) in Applied Math at Harvard University advised first by Harry R. Lewis and then by Tom Cheatham. Her thesis was on “The solution of difference equations describing array manipulation in program loops”. She was well-liked among her peers and was elected Commencement marshal at her Harvard graduation. ³

Computer Science Career

Brown's first job was at Norden Systems, developing software for missile defense technology. In the late 1980s, she joined AT&T Bell Labs as a Member of Technical Staff and later Principal Member of Technical Staff. She also worked at AT&T, Verizon Wireless, and Speech-Soft Solutions as a speech scientist and speech technology specialist. This career continued until her death in 2020.⁴

Inventor of Natural Language Call Router

³ *Deborah Washington Brown*. (n.d.). UMass Lowell. Retrieved December 7, 2021, from <https://www.uml.edu/Profiles/Deborah-Washington-Brown.aspx>

⁴ *Alumni profile: Deborah Washington Brown, Ph.D. '81*. (2020, June 24). SEAS Harvard. Retrieved December 6, 2021, from <https://www.seas.harvard.edu/news/2020/06/alumni-profile-deborah-washington-brown-phd-81>

Brown worked at the forefront of many applications of speech recognition during her career, and her contributions to the field are seen in part through her 11 United States Patents on which she is a named inventor. Among these inventions she is credited as the sole inventor of the Natural Language Call Router which she invented in 2015. This technology ties closely with her research in speech recognition and relates to a natural language call router that recognizes caller's words expressed in plain language and routes the respective call to a proper destination based on the recognized words.

Other Inventions

Deborah's other ten patents include methods for correcting ASR errors in user id recognition (numbers or names) over the phone using confusion matrices, innovations in grammar generation and pruning for ASR, methods for identifying prompt-specific caller responses, multiple methods to identify errors in recognition of user account numbers due to ASR issues using confusion matrices of possible answers, and a system to bridge text chat interaction with a voice-enabled interactive voice response system.⁵

Music

⁵ Brown, D. W. (1996, December 16). *System and method of recognizing letters and numbers by either speech or touch tone recognition utilizing constrained confusion matrices*. Patent. Retrieved December 7, 2021, from <https://patents.google.com/patent/US6061654A/en>

In addition to her technological achievements, Brown was also an accomplished classical pianist. Throughout her career in computer science, Brown continued to study and teach piano, playing at Carnegie Hall and excelling in competitions.⁶

Legacy

Brown married Ruel “Rula” Brown on May 26, 1979, whom she met in college in Boston, Massachusetts. They have two daughters, Laurel and LaToya. She lived and worked in New Jersey and later Georgia. Deborah filed her last patent in 2019 and shortly after, died of pancreatic cancer in 2020.⁷

⁶ *Alumni profile: Deborah Washington Brown, Ph.D. '81.* (2020, June 24). SEAS Harvard.

Retrieved December 6, 2021, from <https://www.seas.harvard.edu/news/2020/06/alumni-profile-deborah-washington-brown-phd-81>

⁷ *Deborah Washington Brown.* (n.d.). UMass Lowell. Retrieved December 7, 2021, from

<https://www.uml.edu/Profiles/Deborah-Washington-Brown.aspx>

References

Alumni profile: Deborah Washington Brown, Ph.D. '81. (2020, June 24). SEAS Harvard.

Retrieved December 6, 2021, from <https://www.seas.harvard.edu/news/2020/06/alumni-profile-deborah-washington-brown-phd-81>

Brown, D. W. (1996, December 16). *System and method of recognizing letters and numbers by either speech or touch tone recognition utilizing constrained confusion matrices.* Patent.

Retrieved December 7, 2021, from <https://patents.google.com/patent/US6061654A/en>

Deborah Washington Brown. (n.d.). UMass Lowell. Retrieved December 7, 2021, from

<https://www.uml.edu/Profiles/Deborah-Washington-Brown.aspx>

U. (2015, January 27). *Natural language call router.* USPTO.Report. Retrieved December 6,

2021, from <https://uspto.report/patent/grant/8,942,981>

