

Personal, Background, and Future Goals Statement (written in 3rd-person form)

Who is Demetrius Johnson (Meech)?

Demetrius is a kind, calm-mannered but enthusiastic young learner and very deep thinker who enjoys the opportunity to learn about God's creation in areas of mathematics, computer science, physics, chemistry, and just about anything that has any kind of relationship to influencing our weather. To that end, he aspires to become an atmospheric scientist/meteorologist who contributes to predicting the weather using all of the tools God has placed in mankind's toolbox (all of the subjects mentioned above). He has loved math and science and especially the weather ever since he was a young boy – and believes it is his calling to study the weather and contribute to this world by improving our knowledge about the atmosphere.

Intellectual Merit

Strong engineer: Demetrius obtained the Cisco Certified Network Associate (CCNA) in high school in only the 11th grade. Thanks to his much older brother (Joe) who is very much like he is, Demetrius was able to take advantage of the opportunity to acquire knowledge at an early age that continued to fuel his passion for learning and thinking. He learned computer networking skills and participated in advanced professional routing and switching projects even before graduating high school. Not only that, but Demetrius has worked on some hardware projects and numerous software projects. These include: building and programming a robot arm using c++; building and programming a weather sensor module (also using c++); creating a robot to do kitchen tasks using Fanuc Robot simulation programming; over a dozen Artificial Intelligence programs; writing kernel code for an operating system to manage process scheduling using locks and semaphores; numerous Microsoft Assembly language programs; and the list goes on (over 70 programs written at this point).

Work Experience: As mentioned Demetrius obtained highly accredited Cisco credentials in high school. He has had financial struggles in college and was forced to take time off, but found jobs working for Artech/IBM/R1-RCM and PDW/Ford. With Artech, he was contracted to IBM to do deskside support for the large medical billing company R1-RCM. At just 18 years of age, he and a team of 3 other individuals managed over 4,000 users (including remote users) at an office with 4 floors and performed cybersecurity tasks, machine imaging and deployment, security planning, troubleshoot documentation indexing, coordinating with the network team, and dealing with customers face-to-face on a daily basis. For 2 years (beginning in 2020) he worked for PDW (Performance Driven Workforce) and was contracted to Ford to test drive their newest vehicle fleet. His tasks were to evaluate the electronics, sensors, and driving performance including all vehicle computer features in order to document and provide insight for project software engineers. Much of his testing was in the new electric vehicle fleet, including the Mustang Mach-E. Lastly, he has done solo contracts work for large supermall stores such as Louis Vuitton to upgrade their point of sale technology and their routing and switching network equipment.

Leadership qualities: Currently, Demetrius is a grader at his current school for the CIS-310 (Computer Organization and Assembly Language) course at the University of Michigan-Dearborn. His previous professor was impressed with his recent summer 2022 software projects and Demetrius performed well in the courses as well as in CIS-310, so he asked Demetrius to assist him as a grader. In fact, the courses which impressed the professor this past summer included Demetrius leading two projects that spanned almost the entirety of the summer: building and programming a robot arm in c++, and building and programming a functioning weather sensor. Demetrius' team gladly uplifted him because he led the projects not only in his hard work ethic and depth of knowledge, but also in his kindness and humility which helped knit the team together to work as a strong unit. Not only that, but he also received Athlete of the Year award in highschool and numerous character awards, and he even went on to run cross country in college at the University of Michigan-Dearborn for 3 years while being a computer science student.

Excellent student who values integrity: Although his grades are admittedly not perfect, this is largely because of his mentality to truly understand the subject matter. However, he still maintains a strong GPA and has excelled in nearly all of his CIS courses including: Operating Systems, Discrete mathematics, Assembly Language and Computer Architecture, and others. Overall, his GPA does not reflect his true deeper understanding of all of the courses he has passed including: calculus-based Physics 1 and 2, calculus, Artificial Intelligence and statistics and many others. He has also excelled in his chemistry courses.

Support at his current university: Demetrius attends the University of Michigan-Dearborn - a top university in the nation, and a top school of computer science and engineering. The university recently received a grant for a new autonomous test vehicle to support ongoing and new research projects at the school; also, the new Engineering Lab Building (completed in 2022!) has been finalized and is being utilized for research and conducting some of the classes Demetrius is currently taking. The university has a robust CIS department, and Demetrius knows and has a good relationship with many of his professors. In fact, some have encouraged him to become a researcher and have appreciated his hard work and demonstration of a depth of knowledge; they know what he is capable of, and they themselves are highly qualified and capable and conduct leading-edge research in addition to teaching courses. These professors would serve as an excellent asset and mentorship to Demetrius Johnson should he receive a fellowship to study for his PhD in Computer Science. Some examples of research being conducted by some of his professors in the CIS department include: vision systems, game design, edge computing, cybersecurity encryption methods, operating systems design, artificial intelligence and machine learning, compiler design and much, much more. Demetrius has also (and is still currently) working for the IT department at his school, and also has a good relationship and reputation with non-faculty staff at the university.

Broader Impacts

Desire to teach: Demetrius desires to be a professor some day to contribute to the next generation of bright minds. He understands fundamentally the importance of doing well in class (good grades) but also truly understanding and applying the knowledge one obtains in a non-robotic manner. He also understands that by teaching and interacting with others, he can learn more and add to his deeper understanding. In fact, Demetrius desires to open a School of Physics, Mathematics and Computer Science some day, and to volunteer his time in his local community (through his church) to teach young students about computer science, including how to program. He would even consider liaoning between his local church and the local school district to provide computer science curriculum so that students from his hometown minority community can be more competitive and contribute their gifts and talent to the world.

Excellent character who values humility: Demetrius Johnson is a humble young man who fears the God of the Bible. He knows that the grace of opportunities given to him are a great blessing, power, and responsibility. To that end, he maintains integrity and demonstrates love and respect for all people made in the image of God no matter what walk of life they come from. As an African-American himself, he grew up in and is a part of the African-American community of River Rouge, MI, and he understands that the community needs humble and honest role models from people whom they can relate to that can bring positive encouragement. He attends the local church there in his hometown city and serves the community with the Truth, compassion, *humility*, and love. He is a humble servant of *The Lord Jesus Christ*. He desires to make a positive difference in the lives of his fellow Americans, and the world. With so much knowledge and understanding to be gained from God's creation, he knows he can continue to contribute like so many before him to the betterment and quality of life for all.

His Vision

Edge Computing has already proven that it can significantly optimize the Internet of Things (IoT). There are now so many technological devices that connect to the internet, and the overall price, production and power of such devices continue to hurl along at the speed of light (okay not exactly, but the electricity on circuits that they're made on do!). We only need to create better algorithms (using equivalent functions) to optimize our computational and network throughput so that we can truly harness the power of our internet devices.

Advancing our computer network technology through edge computing necessitates that our knowledge and growth of experience in the field of Artificial Intelligence will also advance. In fact, the collaboration of AI/machine learning and Edge Computing is at the crux of the next generation Internet of Things - it would evolve into something of an "Internet of *Artificially Living Things*" (IoALT). Every node on every network would essentially always be working for the world network *body*, so that all devices everywhere to some great extent will be optimally connected to serve each other, and thus serve us (the users) best. Nodes will become smart and dynamically collaborative and computationally efficient - much like living cells in a human body.

This transformative research would realize the future of technological autonomy for human users and autonomous robot/computer systems alike. Only 200 years ago, the scientific community could never imagine the magnitude of the power of harnessing light on a circuit board. And the future I see a vision of that humanity might reach *seems* to hold the equivalence thereof. Let me show you a small piece of my vision:

Imagine a world where (some day perhaps not far in the future) where the internet becomes so fluid because advancements of edge computing and artificial intelligence that internet outages are nearly impossible; as long as enough edge devices are interconnected so as to provide even if only a miniscule amount of service capacity with best effort QoS, then there will likely/essentially always exist some internet connectivity - no matter what (cellular, wifi, wired, edge, etc.). I see this is all possible because there are so many nodes in the network from so many IoALT devices in existence: Smart roads, bridges, cities, buildings, ships, trains, trucks, cars, planes, drones, humanoid robots, satellites, servers, phones, glasses/contacts, watches, rings, ovens, refrigerators, clocks, sewage systems, garbage dumpsters - everything is connected if it we want it to be. No device created will ever be wasted. Long gone were the days when a device might waste away because it became *obsolete* or *idle*. If it could compute, then it could contribute. It is a world where nearly all light is harnessed, where practically no running circuit will let the computational power go unused. Even mining for cryptocurrency or using an electric stove meant a node on the network that could compute and contribute.