Artificial Intelligence Ignites in Ethiopia

By █████████████

Ethiopia has come a long way from its nightmare past of famine and war. Today it's well known that it has one of the highest GDP's in Africa, is Africa's largest recipient of developmental aid and the 3rd largest recipient of foreign investment. Little is known however about the computer science thriving from its capital, Addis Ababa, and of course nothing of the fact that its artificial intelligence is on fire.

The foundation for artificial intelligence (AI) in bandwidth-barren Ethiopia comes not so much commercial growth where less than 2% have access to the Internet, but from the despotic government's fervent development of higher education, makeshift emblems to support its massive multi-billion dollar industrial plans. Today, there are over 30 official universities and 130 or so polytechnics or institutes, most of them emphasizing technology. Many of them are in the capital, and in 2012, the Ministry of Science and Technology established its own university resulting in two major science and tech universities in and near Addis Ababa. Behind all the tech glitz however and the government's plans for a $250 million dollar tech park in Addis Ababa, only 34% of Ethiopian children enroll into the equivalent of 9th grade according to world indexes, early adult literacy is approximately 35%, child labor at 27%, girl marriage at an appalling 41%, and the country still ranks near the bottom of the UNDP's World Index for quality of life. But in the capital, education rates are warpedly improved and with 70% of the population under the age of 29, what's emerging is an urban sub-culture of keen young, English speaking software engineers with few private sector opportunities but to program for the outside world. And program they do at a fraction of the cost: today, the Ministry of Trade and Industry 'affirms' more than 700 licensed companies in computer technology and 95 software businesses serving customers worldwide.

At the hub of this tech growth is an AI group, called iCog Labs co-founded in 2012 by a young Ethiopian roboticist, Getnet Assefa Gezaw, and a Californian AI pioneer from Hong Kong called Ben Goertzel. With a team of twenty five Ethiopian software engineers, iCog practices full on 'Strong Intelligence', the belief that computers can potentially simulate the human brain, not just aspects of it. The resolute lab has a bold mission: to create software that not only simulates the brain, but pushes the envelope of what the brain can do. The lab also focuses on a host of practical applications such as SLAM mapping: mobile robots that construct maps of unknown environments based on its experiences in its physical environment, (useful for mineral exploration or agricultural optimization). iCog also delves into 'deep learning' algorithms for vision processing and object recognition (used in drones, satellites or security systems), machine learning data algorithms to predict patterns in everything from agriculture to electricity consumption; and algorithms that react to English and a host of African languages.

iCog is self-supporting, with projects around the world including, AI-driven automated pill dispensers and elderly-care products for Telehealth, a Chinese company, humanoid robotics for Hanson Robotics, makers of the famous Robot Einstein and other lifelike humanoid robots, mapping the genomics of longevity for two California corporations and machine learning algorithms to optimize production of the sweetener, Stevia, for Stevia First in California. iCog's humanitarian work includes making AI teaching tablets for children—distributed to

villages—with games teaching coding, mathematics and English. The effort builds on One Laptop per Child's program which has given thousands of rural Ethiopian children tablets to write computer programs in the language Squeak. iCog is soon expanding to a second branch in Hawassa, a smaller city near the capital and has collaborated with Addis Ababa Institute of Technology to form the first post-doctorate AI program in the country. Finally, iCog is a major contributor to the OpenCog foundation, the largest open-source AI programming provider in the world and founded by Goertzel in Hong Kong. Open source means they share coding with AI developers worldwide and particularly to advance labs across Ethiopia.

Other labs are laying a foundation for AI developers to work in their native Amharic language. EthioCloud, created the first advanced Amharic code programming language which runs on Microsoft's all-purpose .NET and C# platforms. The company also offers the first standard optical character recognition program to convert Amharic paper documents into editable text and the first Amharic text-to-speech conversion software.

Fast on their heels, the Ethiopian government is rabidly eager to put robotics and advanced algorithmic intelligence into its mega-industrial projects, part of its massive, Big Brother sounding, 5 year Growth and Transformation Plan (morphing now into the Vision 2025 plan). Its motivations range from likely megalomania to maintaining the multi-billion dollar flood of foreign investment which it relies on to stay in power. And given that it can't keep leasing out its land to foreigners, and that it sits on a goldmine of minerals and clean energy potential from geothermal to hydraulics, it is zealously enticing the most sophisticated technology partnerships from countries like China, India and Saudi Arabia to become a *major* honcho exporter (the 2nd biggest after South Africa according World Bank estimates). Current AI ventures and supporting infrastructure projects include a $1.4 billion mobile phone deal for Ethiotelecom to install network quality assessing robots in moving vehicles for mobile calls, advanced Chinese-built QoS (quality of service) ambient intelligence into the communication networks for its massive $4 billion electric Light Rail project, the largest in East Africa, US/French machine-learning self-diagnostic intelligence software into the power grids to support the Blue Nile's $5 billion Grand Renaissance Dam, the largest hydroelectric power plant in Africa (which will also have its own tech park), cement loading robots and quality assessment robot technology for Dangote Cement, the largest cement plant in East Africa, self-diagnostic intelligence into the electric grids for the Ashegoda Wind Farm, the largest wind farm in Africa and self-diagnostic intelligence into the smart grids serviced by Ethiopian Electric Power Corporation.

The stage is also ripe for AI to be put into many more of its mammoth projects, including a $4 billion US-Icelandic geothermal plant, one of the world's largest, two deep space telescope observatories coupled with multi-billion dollar satellite plans, integration of intelligence into its own fleet of locally manufactured drones and factory robotics into a rapidly growing $10 billion dollar industrial tax free zone, primarily for the Chinese to outsource their own labor from $30 a day per worker in China to $1 per day in Ethiopia.

Technological leapfrogging is a term that is proudly buzzing around the ministries and tech community of Addis Ababa, not to mention Africa: the notion that technology in developing nations can bypass the bureaucracy of older systems. The concept is hugely attractive but if basic human conditions such as nutrition, health, education, representation, labor rights, private sector GDP growth, which is the 6th lowest in the world, forced mass relocation

of entire communities, with little to no compensation, due to Big Brother's mega-plans; if these don't improve at equally considerable rates, then all this artificial intelligent leapfrogging, all this high-tech, motherboard economics, will seem just well, artificial, colonial and circuitry hubris.

Ethiopia nevertheless has a rich history of pioneers. It is the estimated birthplace of Homo sapiens, Africa's oldest independent country, perhaps the oldest in the world, the cradle of culturally advanced, fiercely independent kingdoms, dating to the 8th century BC, one of first 24 members of the United Nations, the first African country to join the League of Nations, the protector of some of the most important heritage sites and a multitude of record breaking scientists, Olympians and marathoners. If the Ethiopian people can progressively claim their country, it might be fitting for them to carry the torch again for mankind: from homo sapien to *homo cyborg* and beyond.