University of Missouri

engineering FOR CHANGE

E4C Fellowship Overview 2020

Supported by
Food Engineering and Sustainable Technologies (FEAST) Lab at University of Missouri

By Engineers, For Everyone.
www.engineeringforchange.org

FEAST Lab

Who We Are

Founded in 2009 by ASME, IEEE and EWB-USA, **Engineering for change (E4C)** is a knowledge organization specialized in Engineering for Global Development with global community of 1,000,000+ that believes engineering can change the world.

E4C's mission is to **prepare, educate and activate** the international engineering workforce to improve the quality of life of underserved communities around the world.

We do this by providing resources and platforms that accelerate the development of impactful solutions and ensure public health and safety around the globe.

Our **E4C Fellowship** is one of our most important efforts in preparing, educating and activating the next generations of engineers to help solve the Sustainable Development Goals (SDGs)

What We Do

- Global community of 1 million+ engineers, technologists and development practitioners
- Engineering insights:
  - News on latest developments, best practices, opportunities and expert insights in EGD
  - Codified data on 1000+ essential technologies in the Solutions Library.
  - Access research studies and field insights
- Workforce development program for young engineers through the Fellowship program

MEDIA

- Thought Leadership: Distinct engineering POV
- Contributing editors
- Opportunities Portal
- Global reach: 1 million+

PROGRAMS

- Research Collaboration
- E4C Research Fellowship
- Design and Engineering Support Services

TRAINING

- Webinars, on-demand resources
- Online course: Intro to EGD
- Tools: Solutions Library

The Need

Many of the world's greatest challenges such as the Sustainable Development Goals (SDGs) can be addressed by **engineering and technology.** However, there is a massive gap, between **that potential and the realities of the world**.

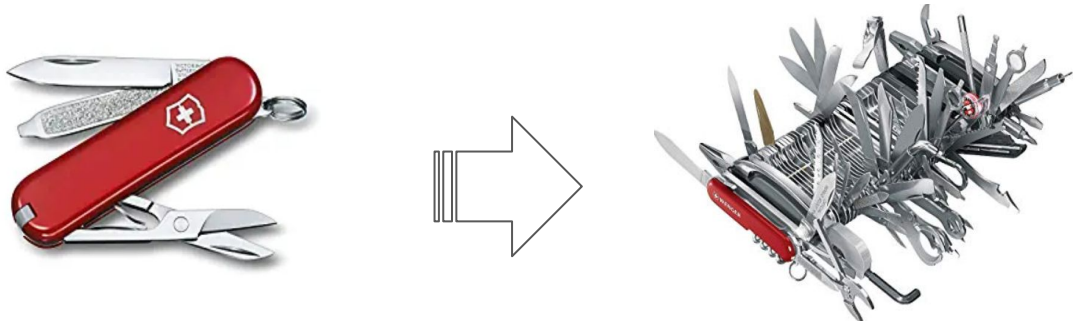
Disconnection between engineering and global development

Lack of local and long-term capacity

Few opportunities for young engineers working in the global development field

There is an increasingly urgent need to create pathways through which engineers can make an immediate positive impact and contribute their technical expertise to advancing successful technology for development projects.

New type of engineer



- Equipped to solve complicated challenges
- Multidisciplinary engineer that brings other disciplines as needed
- Holistic solutions to solve SDGs

E4C Fellowship Program

Engineering for Change's workforce development program in engineering for development

https://www.engineeringforchange.org/e4c-fellowship/

Sponsored by mission-aligned organizations, E4C's Fellows deepen their understanding of development engineering through research, analysis and engagement with the E4C community.

Our aim is that this Fellowship will open opportunities and prepare future generations of engineering and technical professionals committed to the delivery of sustainable solutions by:

- Connecting the Fellows to a global network of experts and like-minded engineers trying to create change in the world
- Deepening the Fellow's knowledge in the technology for development space by researching 20-30 products in the Solutions Library
- Supporting the creation of research collaborations on specific topics sourced by E4C through targeted partnerships that are meant to be immediately absorbed and implemented to world-changing development challenges
- Expand the Fellow's resume and experience through the creation of E4C articles and Research Collaborations that equip them to enter the global workforce of engineers in technology for development
- **Empower them to become changemakers & leaders** their local communities so that they are able to drive impact through technology

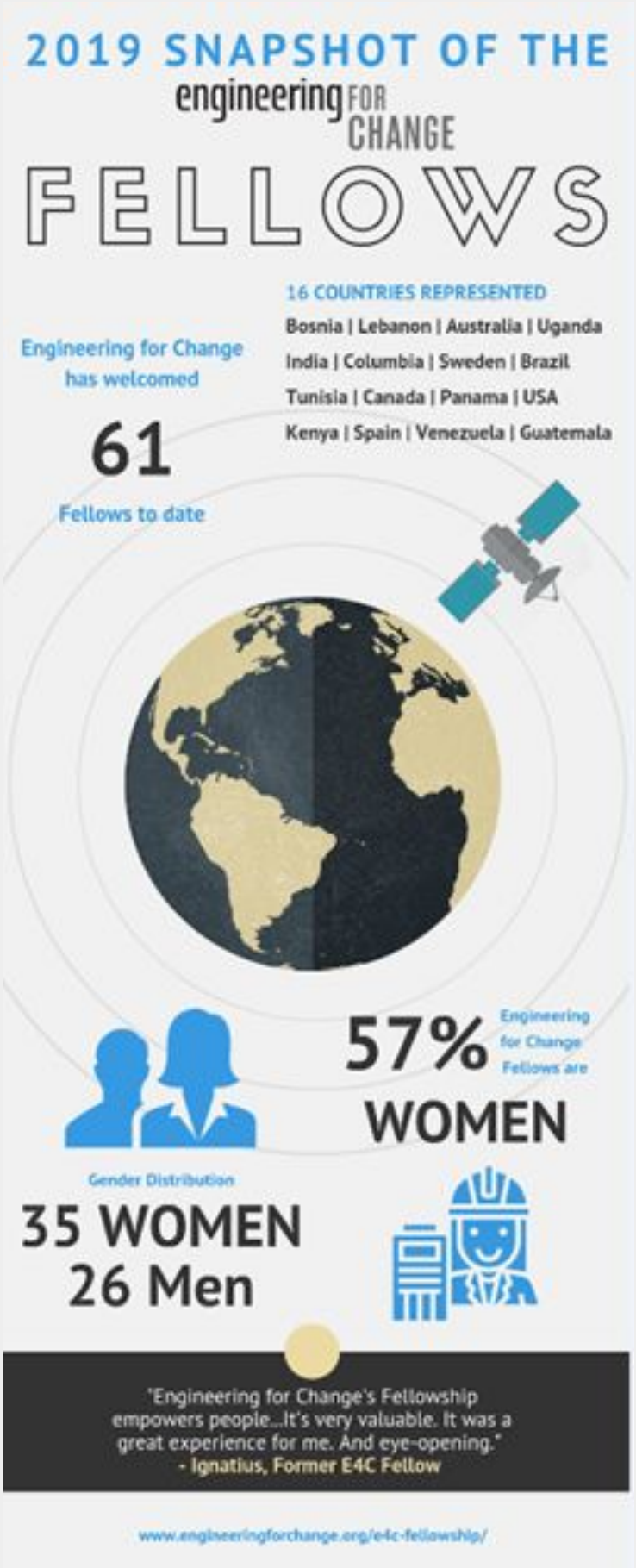
engineering FOR CHANGE

Program Details

The E4C Research Fellowship is E4C's workforce development program in technology for global development serving to build engineering capacity and prepare local talent to solve local and global challenges and create knowledge as a public good.

The Fellowship is designed for early career **engineering / architects (science fields and other technically trained individuals are also included)** specialized or interested in working towards global development.

Each year E4C awards up to fifteen (15) Research Fellowships.



Requirements

Required skills and experiences to apply:

1. Senior undergraduate, graduate and post-graduates in engineering/architecture (not limited to) with a focus and/or specialization in global development aligned to one of E4C's target sectors (Energy, Health, Water, Sanitation, Agriculture, Habitat, Transport and ICT). Note: graduating students and recent graduates are eligible to apply.
2. Field experience with implementation of technology for development via academic programs, social entrepreneurship, or significant volunteering (example: Engineers Without Borders) project work, etc.
3. Excellent project management skills, including the ability to work remotely with minimal supervision.
4. Be resourceful and meet deadlines.
5. Proven ability to research and rapidly acquire knowledge, and execute good judgment and capacity to communicate effectively.
6. Demonstrated ability to work with diverse, international teams including engineers, development practitioners, entrepreneurs, academics, non-profits, for-profits, and program implementers with efficiency and diplomacy.
7. Excellent writing skills in English.

Selection criteria:

The Fellows and Expert Fellows will be selected based on their academic performance, professional and Engineering for Global Development (EGD) experience, sector of specialization, and references.

E4C will award up to fifteen (15) Research Fellowships in 2020.

E4C is recruiting Fellows aligned to E4C's target sectors **(Energy, Health, Water, Agriculture, Habitat, Sanitation, Transport, and ICT)** and geographic regions of focus.

Fellows will be selected depending on their sector of preference/expertise. They will compete with candidates from around the world who are interested in the same sector; for example, all Fellow candidates who are interested in energy will compete with other candidates for the energy sector Fellowship. *Since University of Missouri is sponsoring 2 Fellows this year you will be selected through a different criteria. See next page.*

It is E4C's aim that the Research Fellowship will open opportunities and prepare future generations of technical professionals to design and deliver solutions that achieve the Sustainable Development Goals (SDGs).

University of Missouri sponsored Feeding Tomorrow - E4C fellowship

Grand global challenges: UN SDG's requires partnership – bridging this gap is critical to achieve the global goals.

Dr. Kiruba Krishnaswamy, heads the Food Engineering and Sustainable Technologies (FEAST) lab at the University of Missouri and serves on the IFT Feeding Tomorrow Leverage Task Force. Having "Pillars of Pursuit" Food Sustainability - joint appointment in College of Engineering (**COE**) and College of Agriculture, Food & Natural Resources (**CAFNR**) at University of Missouri – gives her a unique advantage to connect the dots & leverage partnership between E4C and Feeding Tomorrow.

- **Engineering for Change (E4C)**, founded in 2009 by ASME, IEEE and EWB, a global community of 1 million+ engineers, technologists and development practitioners.
- **Feeding Tomorrow** is the Foundation of the Institute of Food Technologist (IFT) with 15,000+ members in 90+ countries, brings the best and brightest minds to the science of food. Feeding the minds that will feed the future.

For long term sustainability Dr. Krishnaswamy proposed, **universities** as key partners connecting public-private organizations leading to ***University of Missouri sponsored Feeding Tomorrow- E4C fellowship***

Sponsored by

College of Agriculture, Food & Natural Resources
University of Missouri

Division of Food Systems & Bioengineering
University of Missouri

University of Missouri sponsored Feeding Tomorrow - E4C fellowship

E4C Fellowship aims to prepare, educate the next generations of engineers and researchers to help solve the Sustainable Development Goals (SDGs).

Food Engineering and Sustainable Technologies (**FEAST**) Lab is supporting 2 spots for University of Missouri students to be a part of the **2020 E4C Fellowship Program - focusing on Agriculture / Food Systems.** Selection process for MU students will be different from the global application pool - **chances are higher to get selected.** (**Application Form - Last Page**)

Eligibility:

- Interested in UN Sustainable Development Goals (students having local and global development experience are highly encouraged)
- Completed the **DSP: Zero Hunger Challenge (Introduction to Global Engineering)** - Offered Fall Semester
- A Deaton Scholar

Interested and would like to learn more about E4C fellowships,

Contact:

Dr. Kiruba Krishnaswamy,

Assistant Professor (Sustainable Food Engineering)

Department of Biomedical, Biological and Chemical Engineering &

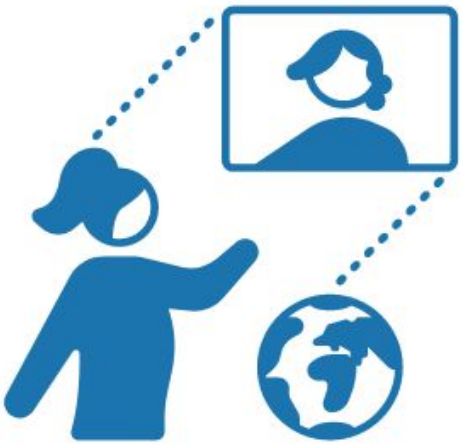
Division of Food Systems and Bioengineering (Food Science Program)

University of Missouri

krishnaswamyk@umsystem.edu ; www.feastlab.org

Program Details

Location



This Fellowship is remote. The Fellows may be based in their location of residence with the only requirement of having good Internet connectivity throughout the 5 months of the Fellowship. Some travel to solution implementation sites and in-person meetings may be required and will be compensated.

Kick off sessions are in-person meetings that are held in Nairobi, Kenya or New York City, USA depending on your location. The kick off session will be the start of the program and is mandatory. Travel will be compensated and is additional to the stipend.

Compensation

Fellows will receive a stipend of $3,000 USD in set of 3 payments per term. Payments are bound to performance and will be processed after completing defined goals/targets at the beginning of each term. Expenses associated with the research process will also be compensated.

For International Fellows (outside the US & Canada), Internet connection support might be provided (Mobile data, Fixed Internet, etc.) based on the need. E4C will cover up to $160 - $200 USD (depending on country rates) for the duration of the Fellowship. Receipts are required; overall conditions for this support will be defined during the selection process of the Fellowship.

Program Details

What do Fellows do?

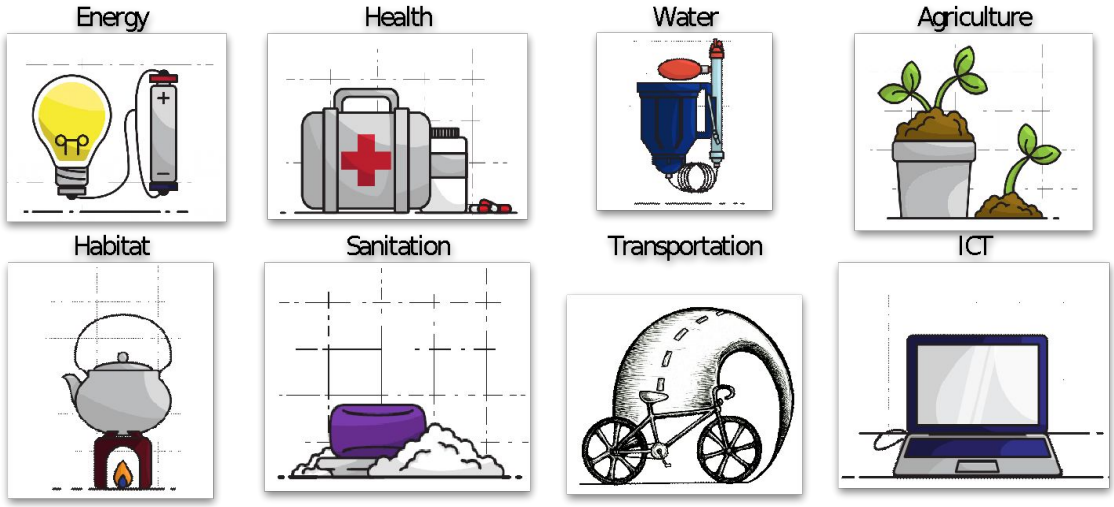
Fellows will do targeted **research** assigned and designed by the E4C team in their specific sector (energy, health, sanitation, ICT, etc) of expertise. Fellows will primarily focus on researching technologies that will be added on the E4C Solutions Library via desk and field research, and supporting the development of Research Collaborations defined together with E4C's local/global partners that will be published on the E4C research page.

Duties & Responsibilities

Reporting to E4C's Program Manager, Program Coordinator and Expert Fellows, the Fellows will work closely with the E4C team, members of the ASME Engineering for Global Development (EGD) team and expert affiliates to:

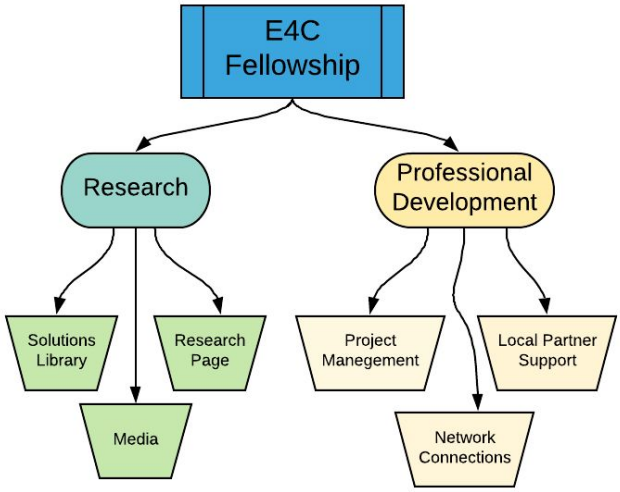
- Research and analyze specified technologies via desk research, literature review and interviews with product designers, manufacturers, and/or implementers.
- Develop performance parameters and validate with E4C's expert advisors.
- Harvest and integrate field experience and user feedback of select solutions through the creation of user experience reports, field insights, articles, research collaboration reports, etc.
- Inform the Solutions Library scaling strategy, including information architecture, product inclusion parameters, user experience, and data administration. Read more about the Solutions Library.
- Support efforts to strengthen the E4C coalition and amplify the relationships with local partners.

Deliverables:
Anticipated outcomes/deliverables include the Solutions Library's product research reports, research collaborations, E4C articles, etc...to be determined together with the E4C team during the start of the program.



E4C's target sectors

What Would You Do?



RESEARCH

E4C Research Fellows will support research related to the following programs at E4C:

- Solutions Library: This is E4C's living, codified database of technology-based solutions. Fellows will investigate a number of technologies worldwide that are attempting to contribute to the Sustainable Development Goals (SDGs) in any of the 8 sectors covered by E4C (Energy, Health, Water, Agriculture, Habitat, Sanitation, Transport, and ICT). The research will be done to include new products (10-30 products per Fellowship) and update existing products reports included in the database. An example of a product report added by Fellows in the past in the water sector is Ecofiltro. Fellows benefit from a deeper perspective of the technology for development sector, market needs, and evolution.

- Research Page: E4C's research work cuts across geographies and sectors to deliver an ecosystem view of technology for good. Targeted research conducted by Fellows on behalf of E4C, our associated collaborators, and clients will be featured on this page in formats such as State of EGD, Trend Analysis, Field Insights, Research Collaborations, and more. Please refer here for examples.

- News media: Fellows have an opportunity, during and after the Fellowship, to write articles based on their field experience and to be shared with our community of +1 million followers.

PROFESSIONAL DEVELOPMENT

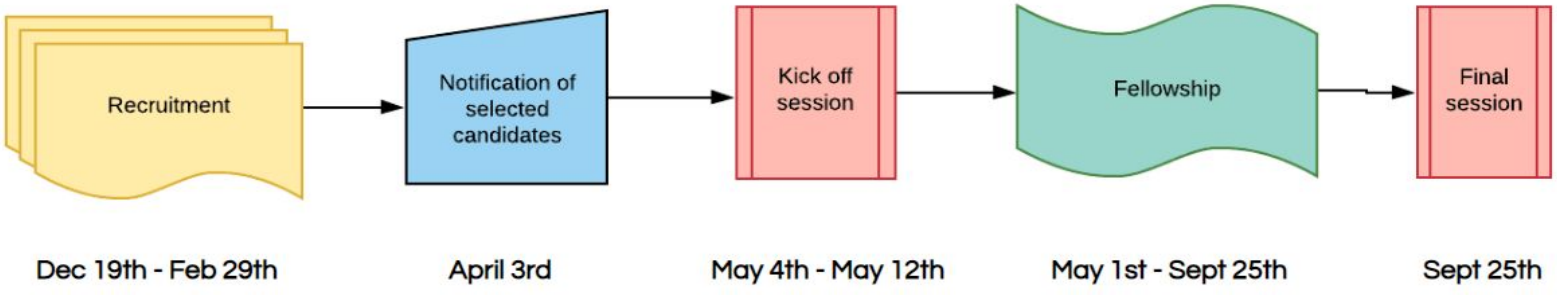
E4C Fellows will receive Project Management training, opportunities through local partner support, and expert network connections in the social innovation space.

- Project management: Fellows will exposed to the most common project management tools available such as Google docs,, Slack, Asana, among others. Fellows will also learn good practices on how to communicate effectively and work remotely with international teams to successfully execute projects. Time management and project management will be a big part of the training during the Fellowship.

- Network connections: Fellows will often be in touch and receive guidance and input from past Fellows and experts in different sectors who are carrying out technology for global development regionally and globally.

- Local partner support: Fellows will have the opportunity to represent E4C locally at conferences and with regional partners through the research collaborations and other engagements during the Fellowship and beyond. Fellow alumni continue to support E4C beyond the Fellowship period and become part of the volunteer network of Engineering for change and ASME's EGD.

Timeline 2020



Important dates:

- Applications are open until **Feb 29th, 2020**
- Notification of Fellowship status will be made available to each applicant no later than **April 3rd, 2020**
- Required in-person orientation will happen between **May 4th – May 12th, 2020** (1-2 days orientation)
- Fellowship commences May 1st, 2020 and runs up to Sept 25th, 2020

Duration:

- 5 months (May - September) part-time commitment (20-25 hours per week)
- It is anticipated the Fellow will work on research related to the Fellowship and will have remaining time to conduct independent, graduate research activities, or other work related to engineering for global development.

Outcomes of the E4C Fellowship 2019

The 2019 E4C Fellowship

A global effort powered by ASME

A diverse team

15 Fellows from 10 nationalities

60% Fellows were women

Fellowship Outcomes

10 research collaborations

201 new Solutions Library products

150+ Solutions Library products updated

12 new editorials for E4C Media

Growth of E4C Reach

100+ expert advisors engaged

5 new nationalities participated in the program

11 new partner organization

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Covering All Continents

To learn more about the 15 2019 Fellows and previous Fellow click here

Our 2019 Research Collaboration Partners

2019 Research Collaborations:

Research Collaboration	Partner	Website
The Use of Evaporative Cooling Chambers in Nairobi, Kenya AGRICULTURE SECTOR	MIT D-Lab	Not published yet
Household water treatment and safe storage (HWTS) in Colombia: Stakeholders and trends WATER SECTOR	Centre for Affordable Water and Sanitation technologies (CAWST)	https://www.engineeringforchange.org/research/household-water-treatment-safe-storage-hwts-colombia-stakeholders-trends/
Women in Tech: Social Innovation in MENA ALL SECTORS	American University of Beirut	https://www.engineeringforchange.org/research/women-tech-social-innovation-mena/
Affordable housing in Kenya: A performance-based analysis of available technologies in Kenya and abroad HABITAT SECTOR	UN Habitat	https://www.engineeringforchange.org/research/affordable-housing-kenya-performance-based-analysis-available-technologies-kenya-abroad/
Challenges for dissemination of sustainable technologies in India ALL SECTORS	India Institute of Technology (IIT) - Madras	https://www.engineeringforchange.org/research/challenges-dissemination-sustainable-technologies-india/
State of EGD Australia & New Zealand ALL SECTORS	University of Technology, Sydney	Not published yet
Social Innovation in Tunisia SANITATION SECTOR	Think.IT	https://www.engineeringforchange.org/research/social-innovation-tunisia/
Dignity in Digital ID in East Africa ICT SECTOR	Norwegian Red Cross, Save the Children, Norway Church Aid, Innovation Norway, Norwegian Refugee Council	https://www.engineeringforchange.org/research/dignified-id-cash-assistance-east-africa/
Sustainability D&M ICT SECTOR	Autodesk	Not published yet

Learn more about other research collaborations in the Research Page

E4C Fellowship 2019 in Pictures

Kick off session in Nairobi, Kenya

Fellows attending the ASME iShow Competition and supporting the judges in the review of the finalists.

Kick off session in New York City, USA

UNITED NATIONS

Fellows attending the Science, Technology, and Innovation (STI) Forum at the United Nations headquarters

E4C Fellowship 2019 Testimonials

"Contacts, communicative skills, meeting other international people with different ways to work, very competitive workers which had a lot of things to learn from. I think this fellowship has and will have an impact on my career".
-Carlos García Lanchares, Spain, ICT Sector

"My wow moment during the fellowship was when I really understood the tech4dev sector through the PRs that I did. I realized that a humanitarian engineer shouldn't only be good at designing or "engineering", but at the same time he/she should really understand the target audience of his/her product and their circumstances. And I really grasped this idea through one of Mariela's presentations. The most valuable products could be so simple yet so effective". - Joyce Hallak, Lebanon, Transport Sector

"It was super important for me to understand the tech4dev field out of Brazilian and public university reality. It's a broad field with different actors struggling for a more justice world".
- Fernanda Petrus, Brazil, Habitat Sector

"In the Fellowship I gained an insight to the energy sector thanks to the PRs and the energy revamp projects. Could simultaneously interact with several brilliant individuals, and hope to network with them in the future".
- Amartya Mukherjee, India, Energy Sector

"This experience has helped me in my presentation skills and creative thinking".
- Pauline Mweu, Kenya, Energy Sector

E4C Fellowship 2019 Testimonials

"During the fellowship, I was not so sure of the SDGs but what I didn't realize that my entire research and work revolves around them. Learning and understanding the broader perspective will definitely be a takeaway. In 20 years, all I can say is, I would love to have an alumni fellow call when every one of us is at a great position, doing greater things and E4C will be a bit older than all of us, still praising on our efforts. Thanks, Mariela!" -Nishant Agarwal, India, Health Sector

"The experience has broadened my world view and has given me a taste of different tools and skills that I wish to become better at and with which I would be even more capacitated to do absolutely anything".
- Marilynn Holguin Clover, Colombia, Water Sector

"The fellowship has helped me better understand the landscape and ecosystems of the development sector, and how to best approach it. I have made some fantastic professional connections with the other fellows, as well as the E4C organisation. I have also had a glimpse at the careers of others working in this space, and have learned from them. Finally, I really do feel as though I have advanced my research, writing and time management skills far in the last few months".
-Rhys Keogh, Australia, Energy Sector

"The most valuable tool I gained during the fellowship was definitely the network - meeting other fellows and learning about their projects, and connecting to experts during the research collaboration". - Senka Hadzic, South Africa, ICT Sector

"The team is awesome; great support from fellows, expert fellow, Jr PM and PM. The platform offered me an opportunity to interact with people from different backgrounds, with different expertise".
- Benson Maina, Kenya, Agriculture Sector

"I learned about new opportunities in development engineering!"
-Kathleen Kirsch, USA, Sanitation Sector

University of Missouri

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Apply

Applications open: **December 19, 2019**
Application deadline: **March 2, 2020**

Submit you application by filling out the following **2020 Fellowship Application Google form**: https://forms.gle/7PTavLaSd5tKfQdX9

Be ready to upload the following required documents or supporting information:

1. **Resume or CV.**
   This must be titled as follows: Complete name_CV. Example: **Maria Rojas_CV**

2. **Letter of Interest (1-2 pages maximum) indicating**:
   - How the Fellowship aligns with your personal goals and areas of study
   - Relevant experience in Engineering for Global Development (EGD)
   - Demonstrated skills and accomplishments related to the position
   - What element of the E4C programs like the Solutions Library or a Research Collaboration is of greatest interest to you

   This must be titled as follows: Complete name_Letter of Interest. Example: **Benson Maina_Letter of Interest.**

3. **Two (2) reference names** that have been selected to send the following **E4C fellowship Reference Google form** (https://forms.gle/4bJnEjVV7TnNxgxx6). You must be recommended by a representative of the University in which you are currently enrolled (ex. Program Manager, Lab Head, PI, etc.) and/or current Managers at the companies of current or past employment. ***Please be sure to send this link to your two references and remind them to use the same name and last name as you submitted through your initial application in the first Google form.*** *If you wish to upload a letter of reference (optional)* this must be titled as follows: Complete name_reference letter Example: **Fernanda Petrus_Reference Letter.**

4. **Additional documents (optional)** supporting your application (Ex. Recommendation/ Reference letters, news articles, photos...etc.)
   Any additional documents must be titled as follows: Complete name_Additional document1. Example: **Marilynn Holguin_Additional document1**.

If you have any questions about E4C contact our Program Coordinator: marilynn@engineeringforchange.org
For University of Missouri - related information and eligibility refer (Pg 7-8); contact Dr. Kiruba Krishnaswamy (krishnaswamyk@umsystems.edu)

FEAST Lab