



SPR Research and Education Foundation

Foundational Insights Newsletter: Distributed Up to Four Times a Year

What's In Store for the SPR REF?

Whether you are attending SPR 2025 in Hawaii, the SPR REF Campaign for Children Committee has many ways for you to get involved and support the Foundation in the new year.

Online Silent Auction: Brought back by popular demand, the silent auction featured: EXOTIC vacation locals, such as Tuscany and Disneyland, for you to bid on for yourself or your family! The REF partners with LuxGive, a professional hospitality organization that provides concierge benefits. The 2025 auction will include travel experiences to the Virginia Vineyards, Disney World Wonder, Curaçao Shores, and more. **Vacation Experience + REF Donation = A win, win!**

Donated Works of Art: SPR has many talented members who donated their works of art last year, and we remain in awe of their talents, and grateful for their generosity. We look forward to seeing your creativity from original pottery, etchings, photography, wood and jewelry making, books, fabric art, and more for the *Second SPR REF Small Change Live Online Auction!* **If you are interested in donating your works of art, [sign up here](#) by Monday, February 10, 2025.** Don't let the date deter you; your goods don't have to be ready then; that's just when we need your commitment.

Coming Soon - SPR REF Online Store: The store will feature SPR swag - polos, short and long-sleeve tees, insulated tumblers, and more! There may even be an SPR 2025 T-shirt for you to purchase and adorn during the luau! Stay tuned for more information.



See what impact an SPR Foundation Research and Education grant can have on a young investigator!

"I am incredibly grateful to have been given the opportunity to work on this project, especially with the support of the SPR Research and Education Foundation grant. This grant was instrumental in legitimizing our ideas and approaches, which boosted our confidence. Further, the monetary support of this grant allowed us to hire a post-doc to help us accomplish the proposed aims. In essence, this line of inquiry would not have been possible without the support of the grant."

Dr. Andy Tsai, 2022 SPR REF Pilot Award Recipient

Dr. Andy Tsai was the recipient of a pilot grant from the SPR R&E Foundation. He is an Assistant Professor of Radiology at Boston Children's Hospital . He presented his work on "Machine learning to maximize radiologic detection of classic metaphyseal lesions of infant abuse" at the SPR's last annual meeting in Miami, Florida. Investigators are challenged in finding funding for their unique ideas. See how your donation can make an impact!

Project Title: Machine learning to maximize radiologic detection of classic metaphyseal lesions of infant abuse

Project Summary: The classic metaphyseal lesion (CML) is a distinct injury that is highly specific for infant abuse. CMLs can occur in any of the long bones, but the distal tibia is one of the most common sites. This type of fracture poses a diagnostic challenge due to its variable and frequently subtle radiographic appearances. A computer algorithm that can automatically flag potentially abnormal radiographs for special attention during customary radiologic assessment could assist radiologists in the detection of CMLs. We first tested the performance of a binary classification model, based on machine-learning (ML), to categorize normal versus abnormal distal tibia radiographs, utilizing a normal cohort of 177 radiographs and an abnormal cohort of 73 distal tibial CMLs. Our ML model showed an overall performance accuracy of 93%. Building on this prior work, we further develop and evaluate this model in the task of identifying potential distal tibial CMLs by generating synthetic images to increase the size and diversity of the training database. To validate our approach and assessed its clinical utility, we compared the performance of our developed model against radiologists with varying expertise and experiences.

What specific person or experience influenced your pursuit of pediatric radiology? It was not a particular event or person that influenced my pursuit of pediatric radiology. Rather, it was the ensemble experience during my time spent at Boston Children's Hospital Radiology Department while a resident that convinced me to pursue this radiology specialty. The multitude of people that I met and the pathology that I saw convinced me that this is the specialty for me.

Is this your first funded research? No. I had received prior funding from RSNA as well as an internal Harvard Catalyst Grant.

How did you or a colleague come up with this specific idea for your project? We have always been interested in improving the imaging

Was the SPR REF symposium at the SPR annual meeting the first time you presented at a national meeting? No, I have presented at prior SPR annual meetings before, and I enjoy my presentations every time.

Tell us a little about yourself, such as a hobby or outside pursuit of yours! Unlike many of my gifted and interesting colleagues, I do not have any unusual hidden talents or hobbies. I do not partake in any special pastimes or compete in any sports. I have zero footprint on social media. I only read books when I absolutely need to.

Anything else our readers should know? I am an Electrical Engineer and Applied Mathematician by training, and I enjoy (as part of my work) developing computer algorithms for

diagnosis of child abuse. With the ever-increasing power and capabilities of AI, we could not resist the opportunity to marry these two topics: AI and child abuse.

Was implementing the project more difficult than you expected or more easier than you expected? Implementing this project was more difficult than expected (which is often the case). However, this difficulty led to more thought-provoking problems and challenges, which ultimately resulted in more interesting and unique solutions.

What did you learn personally about how easy or difficult the project was? From my training as a graduate student and post-doc, I learned not to be too excited or too depressed with research. I minimize my emotional ups and downs and keep an even keel with research projects. I think this balance has served me well during the various trials and tribulations weathered during this research project.

image processing and computer vision applications.

Is there anything you would like to say to potential donors about the impact of the REF grants? I am incredibly grateful to have been given the opportunity to work on this project, especially with the support of the REF grant. This grant was instrumental in legitimizing our ideas and approaches, which boosted our confidence. Further, the monetary support of this grant afforded us to hire a post-doc to help us accomplish the proposed aims. In essence, this line of inquiry would not have been possible without the support of this grant.

*Stay tuned for the next issue of **Foundational Insights** to hear from another grant recipient.*

The Mission of the Foundation is to assess the research and education needs of the pediatric radiology community and develop funding programs to address these needs; evaluate applications for funding and make grants for the research and education that will further the art and science of pediatric imaging; and to raise and manage the funds that make these grants possible.

[Donate to the SPR REF](#)