

UMSAEP AWARD REPORT

Visit to

Missouri, St Louis, USA

From

1 September 2022 to 31 September 2022

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"#\$!%&'(!)*#+)!,-./! !

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01!2,-*(!(+'.3&-*!435+,13!64!75.8-!9':,;2,& !

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<,-&3;,13!(!>='&3!7,.&,-38'1!-1+!?!@,&.84,!>.8,1.,! !

A-.5*3#!(!B';;5183#!-1+!C,-*3/!>.8,1.,4! !

D18:,&483#!(!3/,!E,43,&1!B-=! !

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UMSL Host\$!%&'(!C-8#-1!B-8!

<,-&3;,13!(! 6-3/,-38.4!-3!3/,! !

D18:,&483#!(!6844'5&8!F!>3G!)'584!

1. Overview

H/,!8483!3!D6>)!-4!51+,&3-J,1!2#!64!75.8-!9':,;2,&!/'!84!-!+'3'&-*!
 435+,13!51+,&!;#!45=,&:848'1!-1+!3/,!'F45=,&:848'1!(!%&'(!B-8GH/,!=5&='4,!
 '(!3/84!:8483!-4!'14,K5,13!5='1!64!9':,;2,&!.';=*381L!3/,!K5-1383-38:;!

 +-3-!.'**,.38'1!(!/,&!+'3'&-*!4 35+8,4!81!>MN!-4!|,**!-4!3/,short course on

 B0<MHMF7<M!((,&,+!2#!3/,!>./''!(!7,4,-&./!<-3-!>.8,1.,! -3!3/,!
 D18:,&483#!'(!6844'5&8N!B'*5;28-N!(!&'!>,=3,;2,&!OPOQ!3'R51,IOP!3/3-!
 4/,!'5*+!,@=*&,!3/,!54,!(! ;-3/,;-38.*N!43-38438.*!-1+!.';=53-38'1-*!
 4.8,1.,!81!3/,!(8,*+!(! 4='&3!4.8,1.,!83!/!%&'(!B-8!-1+!.'**,-L5,4! -3!3/,!
 D18:,&483#!'(!6844'5&8!('&!-1-*#481L!3/,!K5-1383-38:;!+-3-!81!,&!+'3'&-*!436!#

 A&!;#!:8483!3!3/,!D>MN!64!9':,;2,&!-4!/43,+!2#!%&'(!C-8#-1!B-8!-1+!/84!
 .'**,-L5,4!81!3/,! <,=-&3;,13!(!R'813!?'1L81,,&81LN!",13'1C-*!-3!>3!)'584G!

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2. Description of Linkage Activities

<5,!3!&,13!3,./1*'L8.*!811':-38'14 !81!;-3/,;-38.*N!43-38438.*!-1+!
 .'!;=53-38'1-*!4.8,1.,N!3/,&!/4!2,1!-!=-&38.5*-&!81.&,-4,!81!4#43,;4!-1+!
 +,;8.,4!3/3-!.'**,.3!-1+!&:8+!, =,&'&:-1.,!+-3- !81!3/,!(8,*+!(!4='&3!4.8,1.,G!
 H/,4,!811':-38'14!/-:!,2,1!,;2&-.,+!-1+!8+,*#!-+!&=3,+!2#!&='(,448'1-*!
 4='&34!'&L-18S-38'14N!-1+!3/,!54,!(!4='&3!&='&'&:-1.,!+-3-!84!2&'!-+*#!

 .'148+,&,+!-4!-!&=3,138-*!L-;, F./-1L,&!81!;-3./!-1-*#484!-1+!4='&3!
 =,&'&:-1.,G!C'!,;,&N!;-1#!'(!3/,4,!4#43,;4!-1+!-==*8.-38'14!/-:,!1'3!
 2,1!-==*8,+!.';=&,148:,*#! 81!->'53!/M(&8.-1!.'13,@3N!-1+!*,-,4!,5!/3!
 2,! *,-&1,+!-1+! L-81,+!(!&'!45./!-1!,@=,&8,1.,G!H/54N!3/,!=5&='4,!(!3/84!
 --+;,8!,@./-1L,!(!&!64!9':,;2,&!-4!3!,@=*&,!3/,!&'*,!(! !

 ;-3/,;-38.*N!43-38438.*!-1+!.';=53-38'1-*!811':-38'1!81!3/,!(8,*+!(!4='&3!
 4.8,1.,!(!&!,&!+'3'&-*!435+#G!",*!|-&,!4',!(!3/,! -.-+;,8!-1+!
 ,+5.-38'1-*! -38:838,4!3/3!64!9':,;2,&!-33,1+,-!-3!3/,!D6>)!+5&81L!/,&!

 :8483G!

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2.1 UMSL

- ! 64!9':,;2,&!;3! !83!/!%&'(!C-8#-1!B-8N!M44'.8-3!<,-1!(!R'813!
 ?1L81,,&81L!-3!D6>)!-1+!L-81,+!81:-*5-2*,!81('&:-38'1!-1+!
 J1!'*,+L, !&,L-&+81L!/,&!43-38438.*!+-3-!-1-*#484G!

!''#\$%&'&'%'%

%

- ! %&'(!B-8!-44843,+!/,&!81!51+,&43-1+81L!1,!3,./18K54!-1+!
 -==&'-. /,4!3!'.!;=53-38'1-*! + -3- !-1-*#484!-1+! =,&4'1-*!.-=.83#F!
 258*+81LG
- ! T1!3/84!&,L-&+N!64!9':,;2,&!-4!-2*,!3!2,L81!!&J81L!'1!1,!'(!3/,!
 ; -154.&8=34!81!/,&!+'.'3!&-*!435+#('!&!452;8448'1!3!'-! =, &F&, :8,!,+!
 -1+!-..&, +83,+!U'5&1-*G!H/,!;-154.&8=3!/-4!481.,!2,,1!452;833,+!3!
 A&'138,&4!('!&!&, :8,IG!

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2.2 North Carolina State University

- ! 64!9':,;2,&!-33,1+,+!- 1!'1*81,!;,,381L!81!3/,!2,L81!'(!>=3,;2,&!
 OPOO!'1!>='&3!M1-*#38.4!!83/!%&'(!?&81!>./*8,=N!M44'.8-3,!%&'(,44'&N!
 9B!>3-3,!D18:,&483#G!!

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2.3 Washington University, St Louis

- ! 64!9':,;2,&!-33,1+,+!
 8-33,1+,+!EI&2./

,4=,.8-**#N!!|2'3/! I'5*+!*8J,l3'!,@=&,44!'5&!481.,&,-==&,.8-38'1!-1+!3/-1J4!
3!D6 !-1+!DEB!('&! =&':8+81L!54!l83!/3/84!=='&35183#!3!'*,-&1!-1+!L&'!|-1+!
258*+!'5&!.-=.83#!-4!-.-+;8.4!-1+!&,4,-&./,&4 !('&!3/,!2,1,(83!'5&!435+,134N!
+,-&3;,13!-1+!814383538!lG

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4. Photo Material

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Image 1. Computational analysis in R.

Image 2: Advanced computational imaging in R.

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