

WEEK 6 SCHEDULE

TABLE 1. July 10-July 14

	Monday	Tuesday	Wednesday	Thursday	Friday
8:00-9:00					
9:00-10:00		Research	Research	Research	Research
10:00-11:00	Presentations (PB 136)	Research	Research	Research	Research
11:00-12:00	Presentations (PB 136)	Research	Research	Colloquium (PB 192)	Research
12:00-1:00	Lunch	Lunch	Lunch	Lunch	Lunch
1:00-2:00	Research	Research	Research	Research	Research
2:00-3:00	Research	Research	Research	Research	Research
3:00-4:00	Research	Research	Research	Research	Research
4:00-5:00	Poster Pre- sentations (Math De- partment Hallway)		Footie		

Workshop: N/A

Colloquium speaker: Mario Banuelos (UC Merced)

Title: Sparse Biosignal Recovery for Genomic Variant Detection

Abstract: Recent research suggests that nearly all individuals have genomic structural variants (SVs): rearrangements of regions in the genome such as inversions, insertions, deletions and duplications. The standard approach to detecting SVs in an unknown genome involves sequencing paired-reads from the genome in question, mapping them to a reference genome, and analyzing the resulting configuration of fragments for evidence of rearrangements. Because SVs occur relatively infrequently in the human genome, and erroneous read-mappings may suggest the presence of an SV, approaches to SV detection typically suffer from high false-positive rates. In our work, we aim to more accurately distinguish true from false SVs in two ways: First, we solve a constrained optimization equation consisting of a negative Poisson log-likelihood objective function with an additive penalty term that promotes sparsity. Second, we analyze multiple related individuals simultaneously and enforce familial constraints. Moreover, our optimization framework allows detection of heterozygous and homozygous sites in related diploid individuals.

Weekend Activity: Hike to Pear Lake in the Sequoia National Forest. Leaving dorms at 7:00 a.m., return by the end of day.