



**CALIFORNIA STATE SCIENCE FAIR  
2009 PROJECT SUMMARY**

<b>Name(s)</b> <b>Kunal Agarwal</b>	<b>Project Number</b> <b>S1601</b>
<b>Project Title</b> <b>Project Zier: Innovating Credit Card Security</b>	
<b>Abstract</b> <b>Objectives/Goals</b> Credit card purchases are fraught with vulnerabilities, and identity theft can and does result from everyday activities. Project Zier unveils a new identity verification system. <b>Methods/Materials</b> Zier comprises of ZierStation, ZierCard, and ZierServer. First, the customer enters a code displayed on ZierCard into ZierStation at POS. Second, ZierStation uses this number to connect to ZierServer and retrieve the customer's voiceprint. ZierStation records the customer's name live and attempts to match it with voiceprint on record. Finally, if the match is made, ZierServer sends text message to the customer which is then entered into ZierStation to complete the transaction. Current prototype system utilizes a computer and an iPhone (ZierCard substitute). <b>Results</b> Zier has delivered promising results. Any attempt to breach the system requires three barriers to be broken: physical possession of ZierCard, matching voiceprint, and the customer's cell phone. This creates a far more secure system than the present-day solution. <b>Conclusions/Discussion</b> R&D concludes that Zier can effectively deter fraud. Hopefully, credit card companies will consider implementing this prototype to bolster industry standards. In production, ZierCard will consist of an EPaper screen and Paper Battery. The physical system's processes will remain the same, but a user-friendly GUI will be programmed. Last, while Zier provides three levels of security, these levels can be scaled down as appropriate for the transaction.	
<b>Summary Statement</b> Project Zier is the basis of an innovative credit security system that will include dynamic card number generation, speaker identification, and cellular text verification.	
<b>Help Received</b> Help from Scott Lubbs in simplification; Help from ZiHan Lin in proofreading;	