ID4Africa
Fingerprints without hardware
The DFS Lab is an early stage accelerator supporting the next generation of breakthrough fintech products in Africa and South Asia.
DFS Lab attracts 100s of applicants and surfaces the very best from a deep well of untapped local potential.

Top 10 Countries
1. Kenya
2. Nigeria
3. Tanzania
4. United States
5. India
6. Ghana
7. Uganda
8. South Africa
9. Pakistan
10. Rwanda

700 Applicants
56 Countries

Our network was built over a decade of on the ground experience in EM fintech plus deep links with global leaders like Gates and World Bank.
Our founders: a diverse pool of inventors and entrepreneurs from around the world
Opportunity landscape

26 days
Average financial KYC onboarding globally

$5
Estimated KYC costs per customer in India

>$100
Deployed-cost of low-end biometric reader

3.3 Bn
Smartphones in the global south by 2020
Biometrics Challenge
Can we capture fingerprints via standard Android camera?
Two Teams

DIAMOND FORTRESS
TECHNOLOGIES

VERIDIUM
HANDS ON SECURITY
Wala
Challenges

General Phone Challenges
• Finger orientation
• Lighting
• Camera focus and capture
• Phone differences
• UI/UX is more complex
• Interoperability key to KYC

Specific Eval. Challenges
• Somewhat artificial situation
• Vendors had to create new UX
• No ability to iterate to optimize performance
• Our choice on hardware
Evaluation

• Compare fingerprint via phones camera against slap readers
• Verification for ~300 subjects with different demographics

Challenge: contactless v. contact-based (legacy) fingerprint matching

Collaborators:
Anil Jain, Michigan State University, USA
Neeta Nain, Malaviya National Institute of Technology, Jaipur, India
Diverse subject demographics

Total no. of Subjects: 309
Challenging edge cases

Worn out/Damaged Fingers

Henna
CrossMatch

SilkID

App 1

App 2

Images at a glance
These plots are for data of only 60 subjects
Calculated in the full sample of 309
Target indicator:
False Accept Rate @ False Reject Rate of 2%

For four-finger fusion, the performance is
• App1: 56.2% FAR @FRR = 2%
• App2: 0.86% FAR @FRR = 2%
• SilkID: 0.00% FAR @FRR = 2%
Image quality was primary challenge

![Bar chart showing image quality for different technologies and NFIQ scores.](chart.png)
Biometrics – observations on the challenge

• Difficult challenge even for most contact-based

• Technology seems to work at a basic level

• More development needed, work in progress

• Important technology: perhaps opens very new financial inclusion models?
Thank You

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