

Face Recognition Market Entry



New National Gambling Bill introduces a system of voluntary and court-ordered exclusion of problem gamblers from casinos. A wide range of exclusion techniques for access control could be applied to South African casinos. However, there are no clear criteria on which to base the decision of which system is to be implemented. Various role players to be considered to determine what can be deployable in casino applications.

Framework, from a business perspective, is proposed which allows multiple role players and varied criteria to effectively evaluate a range of possible solutions. Framework applied to the role players affected by the proposed exclusion of problem gamblers from gambling. Main role players evaluated a no. of possible exclusion techniques according to a range of NB criteria.

Use dissertation to approach the casinos and other vertical markets to promote the purchase of face recognition for problem gamblers.

Casino Exclusion Technique Exploration - Framework Development

80%

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Submitted in partial fulfilment of the academic requirements for the degree of
MASTERS IN BUSINESS ADMINISTRATION

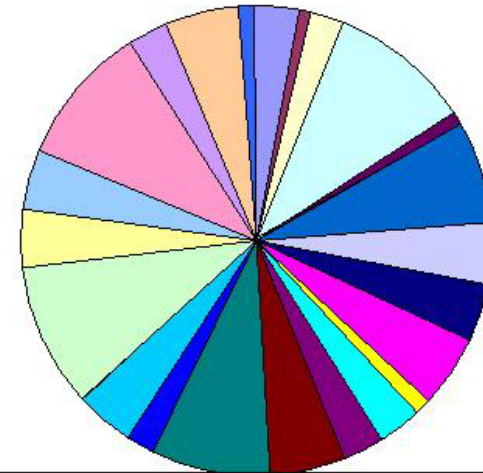
Graduate School of Business, Faculty of Management
University of Natal (Durban)



Gambling anonymous																										
	Total	Ease of	Physical	Accuracy	Response	Intrusiveness	Distinctiveness	Human	Environmental	Stability	User	Market	Mature	False	False	Template	Remove	Level of	compatibility	Identify	Verification	Over	Behavioural	Give	Privacy	
1- 5 scale; with 1 being best, 5 worst	wt	Cost	use for public	contact	Time (Speed-Relative)	ness	(Unique Identifiers)	Factor Limitations	Effects	of Trait	Acceptability	share by technology	Technology	Acceptance (Misidentification rate)	rejection	Size (bytes)	security threats, such as thieves & bag snatchers	on existing system and processes	with existing data	high rollers (VIPs)	Identifi cation	t / Cove rt	Physio logical	Gr ab	Rating	
Weighting of Criteria (100)	100	1	7	1	8	1	2	1	5	1	1	15	1	1	20	5	1	15	20	1	1	1	1	1	5	
Current solutions																										
Guard at the entrance with a file of photographs	252	1	7	1	40	5	2	5	25	5	5	15	1	1	80	10	1	5	5	20	1	4	1	1	1	10
Surveillance operators with a file of photographs	246	1	7	1	40	5	2	5	25	5	5	15	1	1	80	10	1	5	5	20	1	3	1	1	1	5
Alternative solutions																										
Pre-existing identity based solution																										
Identity book photo & no. checked automatically	245	2	14	3	16	4	6	4	20	4	4	60	1	1	40	10	1	2	20	20	1	1	4	1	1	5
Drivers license photo & No. checked automatically	247	2	14	4	16	4	6	4	20	4	4	60	1	1	40	10	2	2	20	20	1	1	4	1	1	5
Card based solution																										
Swipe card	211	3	21	4	24	2	4	5	15	3	2	30	2	1	20	5	1	5	5	20	2	5	4	4	4	20
Proximity card	217	1	28	1	16	1	2	5	10	2	2	45	2	2	20	10	1	5	5	20	2	5	4	4	4	20
Biometrics																										
Contact biometrics																										
Physiological characteristic																										
Fingerprint recognition	347	3	21	5	32	2	8	4	20	4	2	60	1	1	80	20	2	2	10	40	2	2	2	2	2	20
Hand scan	329	3	21	5	32	2	8	4	20	4	3	60	3	3	60	15	3	3	10	40	2	2	2	2	2	20
Behavioural characteristic																										
Signature	258	2	14	2	24	2	2	2	10	2	2	15	3	3	60	15	3	2	15	60	2	2	2	2	2	10
Voice	319	2	35	2	24	2	4	3	15	3	3	30	3	3	60	15	3	2	10	80	2	2	2	2	2	10
Keystroke	302	2	35	5	24	2	4	3	15	3	3	30	3	3	60	15	3	2	10	60	2	2	2	2	2	10
Non-Contact biometrics																										
Overt biometric acquisition																										
Iris Recognition	296	5	14	1	8	1	4	1	10	1	1	60	2	1	20	5	1	1	25	100	1	1	2	1	5	25
Retina	321	5	21	1	8	1	4	1	10	1	1	75	2	2	20	5	2	2	25	100	1	1	2	1	5	25
Covert biometric acquisition																										
Face recognition	227	1	7	1	24	3	2	3	15	3	3	15	2	2	80	20	4	2	10	20	1	1	1	1	1	5



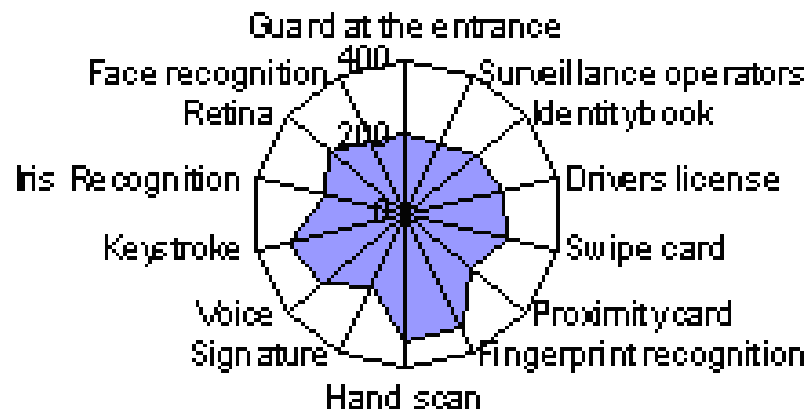
Surveillance Weighting of scores



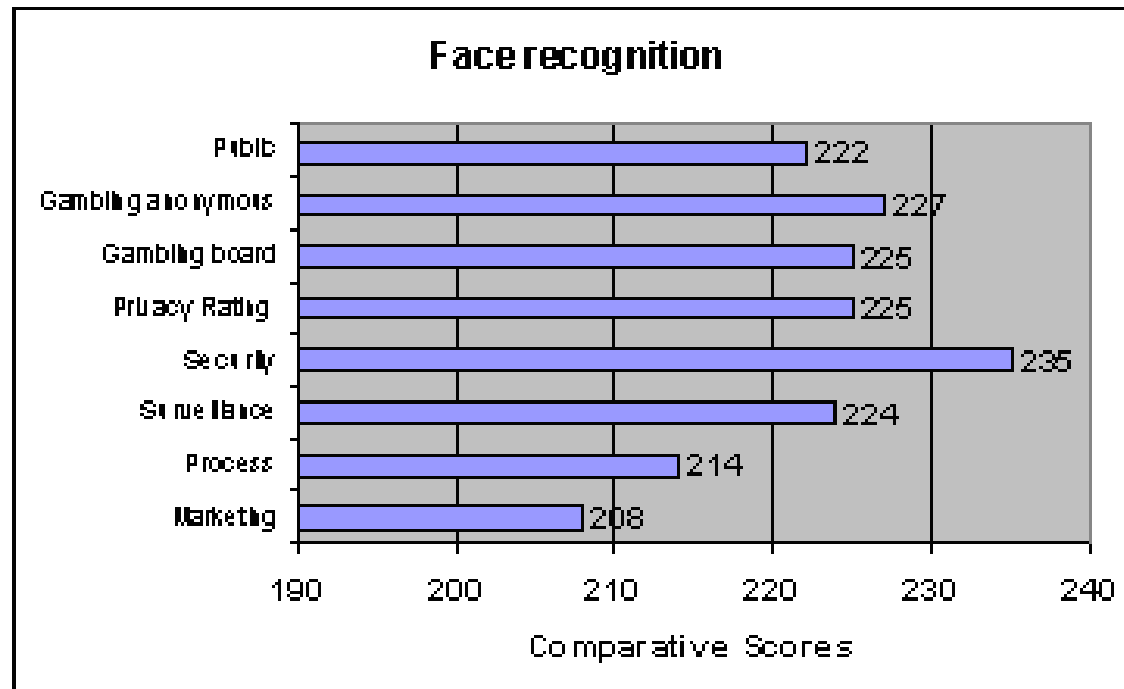
- | | |
|---|---|
| <ul style="list-style-type: none"> ■ Ease of use for public ■ Accuracy ■ Intrusiveness ■ human Factor Limitations ■ Stability of Trait ■ Market share by technology ■ False Acceptance (Misidentification rate) ■ Template Size (bytes) ■ Level of impact on existing system and processes ■ Identify high rollers (VIPs) ■ Overt / Covert ■ Give / Grab ■ | <ul style="list-style-type: none"> ■ Physical Contact ■ Response Time (Speed - Relative) ■ Distinctiveness (Unique Identifiers) ■ Environmental Affects ■ User Acceptability ■ Mature Technology ■ False rejection ■ Remove security threats, such as thieves & bag snatches ■ compatibility with existing data ■ Verification / Identification ■ Behavioural / Physiological ■ Privacy Risk Rating |
|---|---|



Marketing

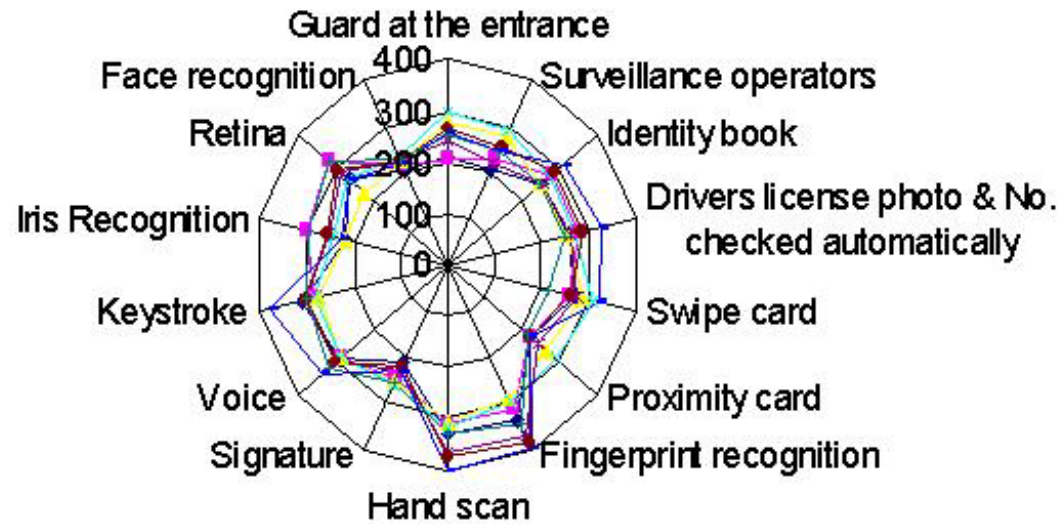


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Exclusion techniques rated by role players



RESULTS



The current solution of a security guard at the entrance is superior according to casino operations department.

The casino marketing division places a high emphasis on ease of use for the public. Of the alternative solutions, comparison-based solutions (using an identity book) were preferred by Gambling Anonymous while card-based solutions (proximity card) was found to be preferable by the public.

The casino surveillance department preferred non-contact, overt, biometric acquisition (such as iris recognition).

Covert biometric acquisition (face recognition) is found to be the most acceptable to all the role players, with fingerprint recognition being the least acceptable.

The application of the framework allowed multimodal exclusion techniques (face recognition linked to casino loyalty cards) to emerge as a promising way forward.

Face Recognition

SYSTEM DESCRIPTION:



Use face recognition to **assist in identification**.

Manually compare live & saved facial images against a database of saved face images, with an **operator reviewing results**, making decision.

One is using the face recognition system to check if the person has been seen before, with the operator to check the match.

Using Face Recognition

one can **IDENTIFY repeat trouble makers** or banned people and take appropriate action.

Face Recognition System



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Analogue to digital
converter

(Frame Grabber)

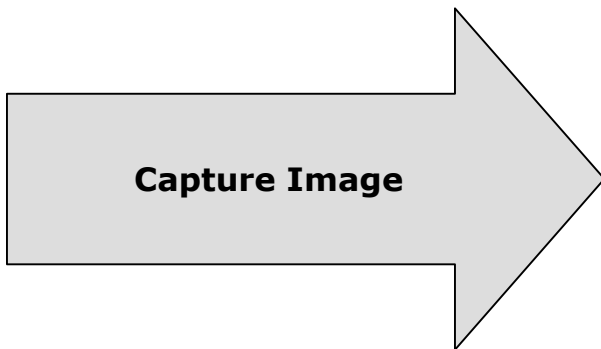
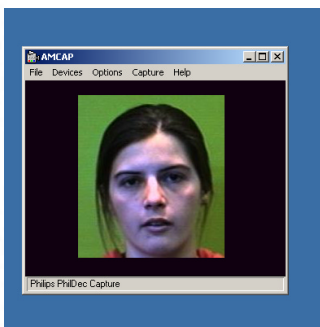


Face Recognition Value Proposition

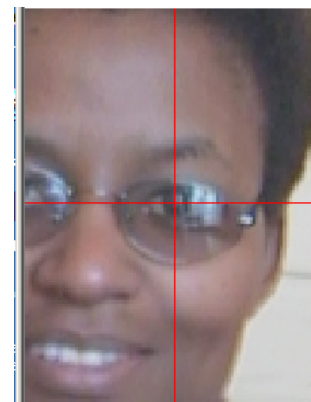
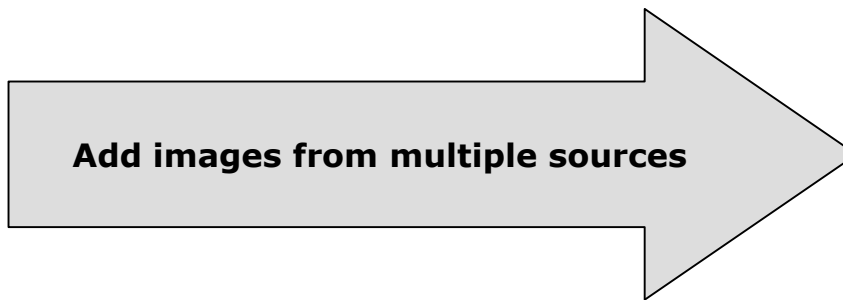
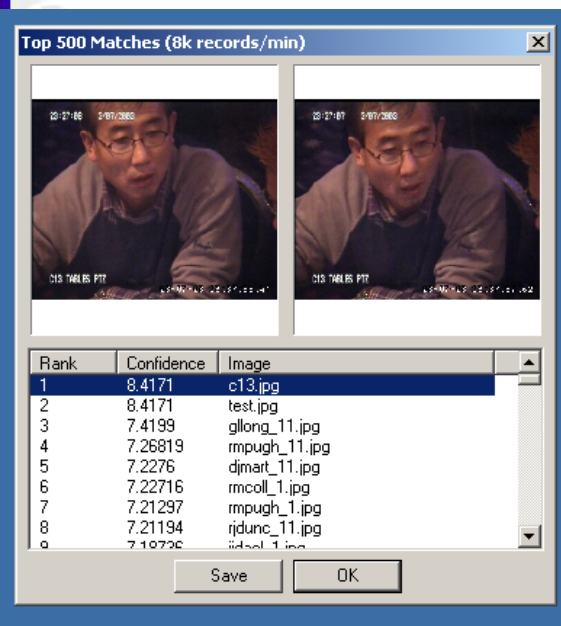
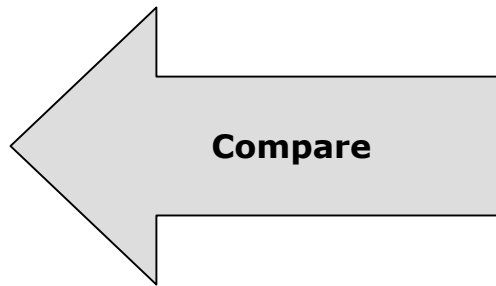
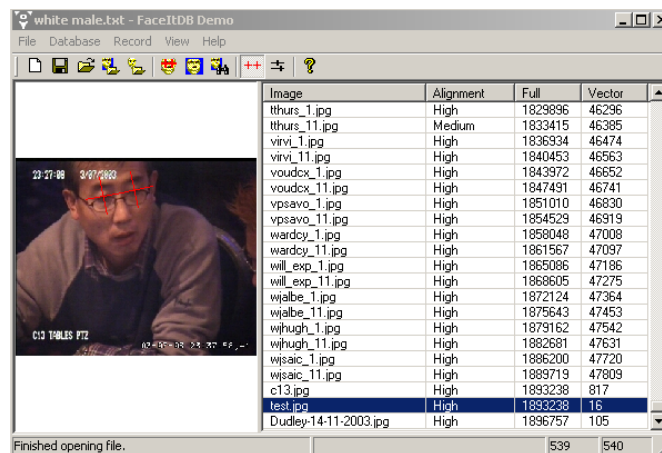


- Provide all face recognition requirements;
- System comes with everything required to capture, save, create databases of faces, and compare facial images;
- Free loading of client database of images;
- Customised for casinos;
- Low cost

Face Recognition



Load Appropriate
Data Base



Face Recognition

Casino client



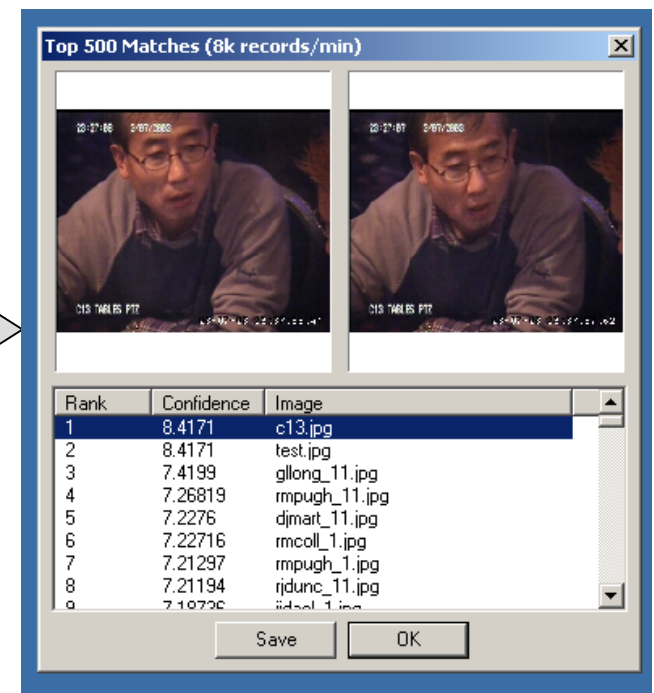
Typical casino client would have a number of facial databases:

- 1 – Banned clients (Gamblers Anonymous);
- 2 – Common criminals (Police Database).
- 3 – Known card sharks (From other casinos).



Compare To
White, Male, banned clients, DB

Capture multiple images



Face Recognition Differences



ITEM	USUAL Proposition	New Proposition
• Codes	• \$1-10/image	• No cost
• Cost	• R500 000 plus	• R95 319/s
• DataBase	• Local	• Web Based
• No of Data Bases	• 1	• Multiple
• System	• Access Control	• Surveillance
• Accuracy	• Crucial	• No - Human decides

Face Recognition Differences



- Internet utilisation to distribute the codes required;
- Binning reduces database size (sex, colour, age);
- Linking casinos together via web server to update each site (card counter / pick pocket / problem gambler loaded in CT , immediately distributed to all other members).

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