A method and non-transitory computer-readable medium capture an image of

bulk grain and apply a feature extractor to the image to determine a

feature of the bulk grain in the image. For each of a plurality of

different sampling locations in the image, based upon the feature of the

bulk grain at the sampling location, a determination is made regarding a

classification score for the presence of a classification of material at

the sampling location. A quality of the bulk grain of the image is

determined based upon an aggregation of the classification scores for the

presence of the classification of material at the sampling locations.

Present invention is an adjustable transfer device for unloading

processed crop onto a container of a transport vehicle including a

control arrangement with an electronic control unit, among other

integrated components. Electronic control unit calculates position of

expected point of incidence of crop flow on the container within field of

view of optical image capture device, displays image of container

together with symbol representing calculated expected point of incidence

of crop flow on container on display, receives adjustment inputs from

user interface for adjusting position of actuator and thus of adjustable

transfer device, updates position of symbol in image on display, receives

confirmation input from user interface once symbol in image on display is

in appropriate position, derives at least one feature in image

representing container, and tracks container within output signal of

image processing system based on retrieved image feature and controls

actuator accordingly to fill container with crop.

Techniques and circuits are disclosed for obtaining a physical unclonable

function (PUF) circuit that is configured to provide, during a first

operational mode, an output signal that is dependent on an electric

characteristic of the PUF circuit. Techniques and circuits described

herein can cause the PUF circuit to enter a second operational mode by

applying a stress signal to the PUF circuit that changes a value of the

electric characteristic relative to another value of the electric

characteristic during the first operational mode of the PUF circuit; and

adjusting, based on changing the absolute value of the first electric

characteristic, a bias magnitude of the output signal relative to another

bias magnitude of the output signal during the first operational mode of

the PUF circuit.

A highly articulated robotic probe (HARP) is comprised of a first

mechanism and a second mechanism, one or both of which can be steered in

desired directions. Each mechanism can alternate between being rigid and

limp. In limp mode the mechanism is highly flexible. When one mechanism

is limp, the other is rigid. The limp mechanism is then pushed or pulled

along the rigid mechanism. The limp mechanism is made rigid, thereby

assuming the shape of the rigid mechanism. The rigid mechanism is made

limp and the process repeats. These innovations allow the device to drive

anywhere in three dimensions. The device can "remember" its previous

configurations, and can go anywhere in a body or other structure (e.g.

jet engine). When used in medical applications, once the device arrives

at a desired location, the inner core mechanism can be removed and

another functional device such as a scalpel, clamp or other tool slid

through the rigid sleeve to perform. Because of the rules governing

abstracts, this abstract should not be used to construe the claims.

In one aspect, a method includes providing support material within which

the structure is fabricated, depositing, into the support material,

structure material to form the fabricated structure, and removing the

support material to release the fabricated structure from the support

material. The provided support material is stationary at an applied

stress level below a threshold stress level and flows at an applied

stress level at or above the threshold stress level during fabrication of

the structure. The provided support material is configured to

mechanically support at least a portion of the structure and to prevent

deformation of the structure during the fabrication of the structure. The

deposited structure material is suspended in the support material at a

location where the structure material is deposited. The structure

material comprises a fluid that transitions to a solid or semi-solid

state after deposition of the structure material.

An articulate probe device includes a first mechanism, a second

mechanism, and an overtube mechanism. The first mechanism includes a

proximal link which is movable coupled to a first intermediate link, a

plurality of intermediate links, and a distal link which is moveably

coupled to a second one of the intermediate links. The second mechanism

includes a proximal link which is movable coupled to a first intermediate

link, a plurality of intermediate links, and a distal link which is

moveably coupled to a second one of the intermediate links. The overtube

mechanism includes a proximal link which is movable coupled to a first

intermediate link, a plurality of intermediate links, and a proximal link

which is moveably coupled to a second one of the intermediate links.

Further, at least one of the first mechanism, second mechanism, and

overtube mechanism is steerable and extendable beyond the other

mechanisms.

The disclosure describes an audio-based emotion recognition system that

is able to classify emotions in real-time. The emotion recognition

system, according to some embodiments, adjusts the behavior of

intelligent systems, such as a ,virtual coach, depending on the user's

emotion, thereby providing an improved user experience. Embodiments of

the emotion recognition system and method use short utterances as

real-time speech from the user and use prosodic and phonetic features,

such as fundamental frequency, amplitude, and Mel-Frequency Cepstral

Coefficients, as the main set of features by which the human speech is

characterized. In addition, certain embodiments of the present invention

use One-Against-All or Two-Stage classification systems to determine

different emotions. A minimum-error feature removal mechanism is further

provided in alternate embodiments to reduce bandwidth and increase

accuracy of the emotion recognition system.

This invention provides an apparatus and method for culturing cells to

probe the influence that the properties of a surface onto which the cells

are bonded has on the properties of the cell.

A method of forming a microneedle array can include forming a microneedle

array having one or more chemotherapeutic agents. The microneedle array

can include a base portion and plurality of microneedles extending from

the base portion, and the one or more chemotherapeutic agents can be

present in a higher concentration in the plurality of microneedles than

in the base portion.

Methods, systems and apparatuses of ultra-miniature, ultra-compliant

probe arrays that allows for design flexibility to match the stiffness of

the tissue it is being applied to, such as the brain tissue, in all three

axes (x, y and z), with interconnect cross section smaller than cell

dimensions. Stiffness matching requires specific geometric and

fabrication approaches, commonly leading to ultra-thin probe wires.

Sizing of the electrodes for specific cell dimensions reduces glial

formation. Further reduction in stiffness is obtained by incorporating

different geometric features to the electrode, such as meandering the

electrode wires. The small thickness and geometric features of the wires

commonly result in very high compliance. To enable effective insertion of

the probes to the tissue, the present invention uses stiff biodisolvable

and/or biodegradable polymers, including single use or combinations of

carboxymethyl cellulose, polyvinylpyrrolidone, polyvinyl alcohol,

maltose, other sugar molecules, polylactic acid and its co-polymers.

A method includes receiving a data bit value at a buffer in a bitcell

based on a first state of a write bitline connected to the buffer, and

transferring the data bit value from the buffer to a first magnetic

switching cell in the bitcell for a later read operation at least by

holding the write bitline to a reference value different from the first

state, and asserting first and second predetermined voltage levels on

respective first and second write wordlines connected to the buffer.

The disclosure describes the use of a neural network circuit, such as an

oscillatory neural network or cellular neural network, to serve as a

physically unclonable function on an integrated circuit or within an

electronic system. The manufacturing process variations that impact the

initial state of the neural network parameters are used to provide the

unique identification for the physically unclonable function. A challenge

signal to the neural network results in a response that is unique to the

circuits process variations. The neural network is designed such that

there are random variations among manufactured circuits, but that the

specific instance variations are sufficiently deterministic with respect

to circuit aging and environmental conditions such as temperature and

supply voltage.

System and method for determining a classifier to discriminate between

two classes--object or non-object. The classifier may be used by an

object detection program to detect presence of a 3D object in a 2D image.

The overall classifier is constructed of a sequence of classifiers, where

each such classifier is based on a ratio of two graphical probability

models. A discreet-valued variable representation at each node in a

Bayesian network by a two-stage process of tree-structured vector

quantization is discussed. The overall classifier may be part of an

object detector program that is trained to automatically detect different

types of 3D objects. Computationally efficient statistical methods to

evaluate overall classifiers are disclosed. The Bayesian network-based

classifier may also be used to determine if two observations belong to

the same category.

Described herein are devices, systems and methods for lysing algae cells,

for production of a lysate product such as a biofuel. The systems and

methods use a passive device that lyses the cells through flow

configurations, geometries, and surfaces that would induce different

stresses and negative pressure on the microalgae cells. When the stress

is designed to exceed the mechanical strength of the microalgae cells,

the cells are lysed, causing, e.g., lipid release which can be used to

produce biofuels. Through an internally-created computational framework,

the concept is validated and can be optimized for the lowest energy input

with the highest level of lipid release. Also provided herein are

computer-implemented methods for optimizing lysis in such systems and

computer-readable media containing instructions for performing the

computer-implemented methods.

The present invention relates to .gamma.-PNA monomers according to

Formula I where substituent groups R.sub.1, R.sub.2, R.sub.3, R.sub.4,

R.sub.5, R.sub.6, B and P are defined as set forth in the specification.

The invention also provides methodology for synthesizing compounds

according to Formula I and methodology for synthesizing PNA oligomers

that incorporate one or more Formula I monomers.

for w in words:

syns = wordnet.synsets(w)

print(syns[0].lemmas()[0].name())

for w in words:

syns = wordnet.synsets(w)

replace = syns[0].lemmas()[0].name())

print(replace)

for toreplace in syns:

syns = wordnet.synsets('programs')

print(words[5])

for dd in syns:

print(dd.lemmas()[0].name())

print(syns)

#syns = wordnet.synsets("program")

#print(syns[0].lemmas()[0].name())

Concept, about,after,all,also,an,and,another,any,are,as,at,be,because,been,before,being,between,both,but,by,came,can,come,could,did,do,each,for,from,get,got,has,had,he,have,her,here,him,himself,his,how,if,in,into,is,it,like,make,many,me,might,more,most,much,must,my,never,now,of,on,only,or,other,our,out,over,said,same,see,should,since,some,still,such,take,than,that,the,their,them,then,there,these,they,this,those,through,to,too,under,up,very,was,way,we,well,were,what,where,which,while,who,with,would,you,your,a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,p,q,r,s,t,u,v,w,x,y,z,1,2,3,4,5,6,7,8,9,0,$,-