## Chapter 1 : Wide Area Augmentation System - Wikipedia

*augmentation - the statement of a theme in notes of greater duration (usually twice the length of the original) statement - (music) the presentation of a musical theme; "the initial statement of the sonata".*

A lot of things can go wrong. But some of them are more likely to be broken than others. I usually start with this short list as an emergency first response: Start with a simple model that is known to work for this type of data for example, VGG for images. Use a standard loss if possible. Turn off all bells and whistles, e. Verify that the input data is correct. Start with a really small dataset 2â€"20 samples. Overfit on it and gradually add more data. Start gradually adding back all the pieces that were omitted: Sometimes, I would feed all zeroes by mistake. Or I would use the same batch over and over. Print the input of the first layer before any operations and check it. Also make sure shuffling input samples works the same way for output labels. Maybe the non-random part of the relationship between the input and output is too small compared to the random part one could argue that stock prices are like this. This happened to me once when I scraped an image dataset off a food site. Check a bunch of input samples manually and see if labels seem off. Shuffle your dataset to avoid this. Make sure you are shuffling input and labels together. Reduce class imbalance Are there a class A images for every class B image? Then you might need to balance your loss function or try other class imbalance approaches. Do you have enough training examples? If you are training a net from scratch i. For image classification, people say you need a images per class or more. Easily fixable by shuffling the dataset. Use standard dataset e. When testing new network architecture or writing a new piece of code, use the standard datasets first, instead of your own data. Do you have too much data augmentation? Augmentation has a regularizing effect. Too much of this combined with other forms of regularization weight L2, dropout, etc. Check the preprocessing of your pretrained model If you are using a pretrained model, make sure you are using the same normalization and preprocessing as the model was when training. For example, should an image pixel be in the range [0, 1], [-1, 1] or [0, ]? For example, if the target output is an object class and coordinates, try limiting the prediction to object class only. Initialize with small parameters, without regularization. After this, try increasing the regularization strength which should increase the loss. Often, my loss would be slightly incorrect and hurt the performance of the network in a subtle way. This might involve testing different combinations of loss weights. If you can, use other metrics like accuracy. Check and double-check to make sure they are working as intended. Try adding more layers or more hidden units in fully connected layers. Use weird numbers for input dimensions for example, different prime numbers for each dimension and check how they propagate through the network. For example, train with just 1 or 2 examples and see if your network can learn to differentiate these. Move on to more samples per class. Check weights initialization If unsure, use Xavier or He initialization. Also, your initialization might be leading you to a bad local minimum, so try a different initialization and see if it helps. Change your hyperparameters Maybe you using a particularly bad set of hyperparameters. If feasible, try a grid search. Reduce regularization Too much regularization can cause the network to underfit badly. This means you overfit the training data sufficiently, and only then addressing overfitting. If your loss is steadily decreasing, let it train some more. Switching to the appropriate mode might help your network to predict properly. Make sure their magnitudes match. For example, the magnitude of the updates to the parameters weights and biases should be 1-e3. Consider a visualization library like Tensorboard and Crayon. Be on the lookout for layer activations with a mean much larger than 0. Deeplearning4j points out what to expect in histograms of weights and biases: For biases, these histograms will generally start at 0, and will usually end up being approximately Gaussian One exception to this is for LSTM. Keep an eye out for biases that become very large. This can sometimes occur in the output layer for classification if the distribution of classes is very imbalanced. However, the proper optimizer for a task can be helpful in getting the most training in the shortest amount of time. The paper which describes the algorithm you are using should specify the optimizer. Check this excellent post by Sebastian Ruder to learn more about gradient descent optimizers. Gradient clipping may help. From Deeplearning4j comes a great guideline: Significantly outside of this range may indicate vanishing or exploding activations. A high learning

rate will quickly decrease the loss in the beginning but might have a hard time finding a good solution. Play around with your current learning rate by multiplying it by 0. Some approaches to fix it: Decrease the learning rate, especially if you are getting NaNs in the first iterations. NaNs can arise from division by zero or natural log of zero or negative number. Russell Stewart has great pointers on how to deal with NaNs. Try evaluating your network layer by layer and see where the NaNs appear. Did I miss anything? Let me know by leaving a reply below. If you liked this article, please help others find it:

## Chapter 2 : augmentation | Definition of augmentation in English by Oxford Dictionaries

*Augmentation definition is - the act or process of augmenting something. How to use augmentation in a sentence. the act or process of augmenting something; the state of being augmented; something that augments: addition.*

This document reflects emerging clinical and scientific advances as of the date issued and is subject to change. The information should not be construed as dictating an exclusive course of treatment or procedure to be followed. Functional oxytocin deficiency and a faulty oxytocin signaling pathway have been observed in conjunction with autism spectrum disorder ASD. Because exogenous synthetic oxytocin commonly is administered for labor induction and augmentation, some have hypothesized that synthetic oxytocin used for these purposes may alter fetal oxytocin receptors and predispose exposed offspring to ASD. However, current evidence does not identify a causal relationship between labor induction or augmentation in general, or oxytocin labor induction specifically, and autism or ASD. Recognizing the limitations of available study design, conflicting data, and the potential consequences of limiting labor induction and augmentation, the Committee on Obstetric Practice recommends against a change in current guidance regarding counseling and indications for and methods of labor induction and augmentation. Opinion Autism spectrum disorder ASD is characterized by social and communicative developmental deficits and repetitive, restrictive, or unusual behaviors 1. Autism spectrum disorder includes the diagnosis of autism, Asperger syndrome, and pervasive developmental disorder not otherwise specified 1â€" 2. Approximately 1 in 88 American children is affected by ASD, although the reported prevalence varies widely, exhibiting a 4: Although the cause of ASD is unclear, it demonstrates a strong genetic predisposition and multifactorial influences. A wide variety of exposures, including many perinatal factors, have been linked to ASD but the suggested associations in many cases are weak, inconsistent, or both among studies, and cannot be equated with a cause and effect relationship 4â€"9. Recent research suggests a role for endogenous oxytocin in normal human social and cognitive behavioral development  Functional oxytocin deficiency and a faulty oxytocin signaling pathway have been observed in conjunction with ASD  Because exogenous synthetic oxytocin commonly is administered for labor induction and augmentation, some have hypothesized that synthetic oxytocin used for these purposes may alter fetal oxytocin receptors and predispose exposed offspring to ASD  Studies to date that have investigated a potential link between oxytocin and ASD have a number of limitations, such as small size, retrospective data collection, and limited control for possible confounding variables. Such characteristics reduce the value of these studies and suggest the need for more research. Among nine studies summarized by Guinchat et al in a review 13 , three studies 7â€"9 demonstrated a weak but significant association between labor induction and autism in univariate analysis, and six studies 6, 14â€"18 found no such association. Only one study found an association that persisted after adjustment for potentially confounding variables 7. A meta-analysis found insufficient evidence to suggest an association between labor induction or augmentation and an increased risk of autism odds ratio [OR], 1. A larger analysis reported an increased odds ratio of autism among children born following induced or augmented labor  Among males, multivariate logistic regression showed a weak association between ASD diagnosis and labor induction and augmentation induced and augmented [OR, 1. Although the Gregory study suggested an association between ASD and labor induction or augmentation, the study design could not determine if such findings were truly a result of cause and effect. This was recognized by the authors, who noted that interpretation of their findings was limited by missing data regarding important potential confounders, the use of education as a proxy for socioeconomic status, and a lack of data regarding induction indications and methods. Subsequent to its publication, the Gregory study has been criticized because of limitations in defining the exposure and the outcome of interest  Critics note that investigators did not know the specific individual or combination of agents that were used for labor induction or augmentation. The critics also note that the American Psychiatric Association reported an editorial error in the criteria listed for the diagnosis of pervasive developmental disorder not otherwise specified in the Diagnostic and Statistical Manual of Mental Disorders DSM-IV ; an error potentially leading to overdiagnosis during much of the time covered by the Gregory study  In addition to recognizing limitations of available

evidence, it is important to view any concerns about an association between labor induction or augmentation and ASD in the context of obstetric practice. Labor induction and augmentation are common in contemporary obstetric practice. Reducing indicated oxytocin use for labor augmentation or induction eg, when delivery is deemed necessary or when labor is not progressing appropriately would increase the cesarean delivery rate and could adversely affect maternal or neonatal health. Conclusion Current evidence does not identify a causal relationship between labor induction or augmentation in general, or oxytocin labor induction specifically, and autism or ASD. Recognizing the limitations of available study design, conflicting data, and the potential consequences of limiting labor induction and augmentation, the Committee on Obstetric Practice recommends against a change in current guidance regarding counseling and indications for and methods of labor induction and augmentation  References American Psychiatric Association. Diagnostic and statistical manual of mental disorders. Autism [published erratum appears in Lancet ; Centers for Disease Control and Prevention. Perinatal risk factors for infantile autism. Prenatal, perinatal, and neonatal factors associated with autism spectrum disorders. Prenatal and birth complications in autism. Matern Child Health J ; The role of prenatal, obstetric and neonatal factors in the development of autism. J Autism Dev Disord ; Prenatal, perinatal, and neonatal factors in autism, pervasive developmental disorder-not otherwise specified, and the general population. Perinatal factors and the development of autism: Arch Gen Psychiatry ; Arginine vasopressin and oxytocin modulate human social behavior. Ann N Y Acad Sci ; Genomic and epigenetic evidence for oxytocin receptor deficiency in autism. Could oxytocin administration during labor contribute to autism and related behavioral disorders? Pre-, peri- and neonatal risk factors for autism. Acta Obstet Gynecol Scand ; Autism spectrum disorders, maternal characteristics and obstetric complications among singletons born in Alberta, Canada. Chronic Dis Can ; Paediatr Perinat Epidemiol ; Obstetric complications in individuals diagnosed with autism and in healthy controls. Perinatal and neonatal risk factors for autism: Association of autism with induced or augmented childbirth in North Carolina Birth Record â€" and Education Research databases. Does augmentation or induction of labor with oxytocin increase the risk for autism? Am J Obstet Gynecol ; American College of Obstetricians and Gynecologists.

*Data Augmentation in play. A convolutional neural network that can robustly classify objects even if its placed in different orientations is said to have the property called www.nxgvision.com*

The Labor Party Rudd government was elected on 24 November and initial planning commenced. A new satellite network would be built to reach the rest of the country. Organisations lodging compliant proposals were neither able to meet the requirements nor able to raise the necessary capital. A non-compliant proposal was received from Telstra and they were excluded from consideration. A return on investment of 7. A forced structural separation of Telstra was threatened but not completed. The Gillard government was elected at the Australian federal election,  As a minority government priority was given to regional and rural areas, areas from which supporting cross-bench MPs were elected. An increase in the peak speed to one gigabit per second was announced in response to Google Fiber developments in the USA. Tasmania was selected as the first state for a three stage trial FTTP rollout. Stage one was announced on July  The first customers were connected a year later. Stages two and three were announced on 21 October and 1 March , respectively. Construction commenced in , with the first five locations announced as the regional and rural communities surrounding Geraldton , Toowoomba , Tamworth , Ballarat and Darwin. Telstra would not be able to market their mobile network as an alternative to the NBN for a number of years. Following low take up rates in Tasmania, the government adopted an opt-out model in which users are assumed to want the service unless they explicitly opt-out. Fourteen second-release sites comprising 54, premises in all states and territories were announced on 8 July with construction commencing in August. The first services went live on 19 April  These focused on the estimated cost and timeline for implementation. The build cost had been a key point of debate. After the election, the Abbott government announced immediate changes to the NBN: The government limited the rollout of FTTP to those areas already in development. Later implementation of the Multi-Technological Mix MTM began with the promise of earlier completion and significant cost savings compared to the earlier approach. Studies and a strategic review were commissioned. Delays occurred when work was stopped for several weeks sites where asbestos was found in Telstra pits. Turnbull announced the MTM approach promising significant savings and earlier completion. At 3 November, construction of the network had passed , premises and there were , active customer services. And then that network company in effect became the NBN. The virtue of that was you actually had a business that knew what it was doing, that was up and running, that had years of experience getting on with the job. The building on the left is the telephone exchange ; the buildings on the right are served by the exchange. Dotted rectangles represent separate living or business spaces within the same building. The NBN network, as of , included wired communication: It also sold access for mobile telecommunication backhaul to mobile telecommunications providers.

## Chapter 4 : Labor Induction or Augmentation and Autism - ACOG

*Wide Area Augmentation System - How It Works Unlike traditional ground-based navigation aids, the WAAS covers nearly all of the National Airspace System (NAS). The WAAS provides augmentation information to GPS receivers to enhance the accuracy and reliability of position estimates.*

Augmentation to the rescue!! One of the issues one comes across while dealing with image data is the inconsistency in images some are either too big or small, some are rectangular instead of square, etc. Another frequently faced problem is the number of images in the training set which often results in overfitting. To deal with these issues, I outline a technique that uses augmentation transforms â€" the images in the training set are transformed so as to increase the ability of the model to recognize different versions of an image. This increases the breadth of information the model has. It now becomes better suited to recognize target objects in images of varied contrast, size, from changed angles and so on. To show how augmentation works, we look at the Dogs vs Cats dataset and make use of the deep learning library fast. This post is inspired from fast. We first train the model without data augmentation using learning rate 0. The baseline model With this we see a validation accuracy of 0. Thus we see that 26 images â€" 20 cats and 6 dogs out of have been misclassified. Applying Augmentation Transforms To reduce this misclassification error, we now augment the train data and see if there is an improvement. We can either choose from top-down transformations or side-on transformations. Here we use a side-on transformation because given that we have pictures of dogs and cats that are taken from the side as opposed to from the top , they possibly need to be just flipped horizontally, rather than vertically. Side-on transformations Top down transformations are not appropriate here due to the nature of the images â€" upside down images of a cat or dog are rare! While training this network, the learning rate is kept the same in order to see the difference in accuracy only due to augmentation. When we use augmentation to train the network, for every epoch a new transformation of every image is generated. Thus the model sees the same number of images in every epoch as many as there are in the original training data , albeit a new version of those images each time. Thus, the range of images the model has seen increases with every epoch. Networks such as ResNets are pretrained, i. Without doing this, we will still be using the precomputed activations that correspond to the original training data, not giving us much improvement in accuracy. Training the network with the transformed images Now we get a validation accuracy of 0. From the confusion matrix above, we see that we have misclassified 22 images this time; a reduction in error as compared to before. Thus, we have increased the prediction power of the model. To understand why this is needed let us first take a look at some of the misclassified images: Take a look, for example, at the rectangular image of the dog. When the model tries to predict for this image, it sees just the center of the image cropping by default is center. Thus it cannot predict if the image is of a dog or a cat. To mitigate errors such as these we use TTA wherein we predict class for the original test image along with 4 random tranforms of the same image. We then take an average of the predictions to determine which class the image belongs to. On using TTA, we now get a validation accuracy of  Conclusion While the baseline ResNet34 model fits the data well giving pretty good results, applying augmentation transforms and TTA reduce misclassification errors, improving the accuracy of the model. This may probably prove to be even more effective. Aside from augmentation on images, it will be interesting to see how augmentation can also be applied to structured data to boost performance, just like it does in case of unstructured data! Let me know your thoughts on this!!

## Chapter 5 : How to prepare/augment images for neural network? - Data Science Stack Exchange

*Also, data augmentation becomes the thing must to do when training a deep network. There are many ways to do data augmentation, such as the popular horizontally flipping, random crops and color jittering.*

Background Mest and Humble evaluated the long-term safety, duration of effect, and satisfaction with serial injections of poly-l-lactic acid PLLA for HIV-associated facial lipoatrophy. In this single-site, open-label, re-treatment study, 65 HIV-positive patients were treated with injectable PLLA every 5 weeks until optimal re-correction. Skin thickness was measured at fixed points with calipers. Patients completed a post-retreatment satisfaction questionnaire. Milder facial lipoatrophy james scale score 1 to 2 on initial presentation required fewer re-treatments and had more sustained correction. Time to first re-treatment varied according to James scale score: The majority of patients required or asked for 4 re-treatments or less over a month period. The mean patient satisfaction score was 4. No serious adverse events were reported. The cosmetic surgery exclusion precludes payment for any surgical procedure directed at improving appearance. The only exception to the exclusion is surgery for the prompt repair of an accidental injury or for the improvement of a malformed body member which coincidentally serves some cosmetic purpose. The etiology is unknown. If the breast examination is otherwise normal, the patient may be referred for cosmetic surgery. The available surgical options vary depending on the location of the hypoplastic breast tissue â€¦. Teenagers may seek breast augmentation for reconstructive purposes related to congenital defects e. Brandt et al examined the safety of SGP-HA and LGP-HA in treating facial wrinkles and folds around the mouth; the secondary objective was to evaluate the effectiveness of these products. This open-label, 4-week study at 2 U. At screening, a 5-grade Wrinkle Severity Rating Scale WSRS was used to evaluate the baseline appearance of bilateral NLFs, and a 6-grade Wrinkle Severity WS scale was used to evaluate the appearance of bilateral oral commissures, marionette lines and upper perioral rhytides. To qualify, each patient must have had moderate-to-severe wrinkles at 1 pair of marionette lines and upper perioral rhytides. All reported local and systemic adverse events AEs were recorded. At 2 weeks after treatment or touch-up, the treating investigator and the patient assessed appearance using the Global Aesthetic Improvement Scale GAIS. A total of 20 patients with a mean age of  Product was injected into the mid or deep dermis using primarily linear threading and multiple punctate pools. The reported events in decreasing order of occurrence were bruising, tenderness, swelling, redness, headache and discomfort. Bruising was more common in the NLFs and marionette lines than in the oral commissures and perioral rhytides. Tenderness occurred more often in the perioral rhytides than in the other areas. The maximum intensity of all TEAEs was considered mild. Most TEAEs resolved within 7 days, with an average duration of 4 days. Clinical data on anatomic area, level of evidence, patient population, trial design, endpoints, efficacy, and safety were extracted from PubMed. A total of 53 primary clinical reports were analyzed. The highest-quality efficacy evidence was for the NLFs, with 10 randomized, blind, split-face, comparative trials. Several randomized, blind trials supported treatment of the glabella, lips, and hands. Lower-level evidence from studies with non-randomized, open-label, or retrospective designs was recorded for the naso-jugal folds tear troughs , upper eyelids, nose, infra-orbital hollows, oral commissures, marionette lines, perioral rhytides, temples, and cheeks. Common AEs across anatomic areas were pain, bruising, swelling, and redness. Serious AEs were uncommon 8 events in 8 patients of 4, total patients and were considered to be unrelated 7 events or probably unrelated 1 event to treatment. Preliminary reports in other anatomic regions suggested effectiveness without major complications. While products containing a hyaluronic acid gel e. Aesthetic Alteration of the Female Genitalia: Triana and Robledo noted that aesthetic surgery of the external genitalia in women encompasses many procedures and may address the labia minora, clitoral hood, labia majora, mons pubis, or vaginal opening. During the initial evaluation, the surgeon should consider all aspects of the external genitalia to develop an appropriate surgical plan. It may be necessary to perform 2 or more procedures during the same surgical session to achieve the desired aesthetic result. In this continuing medical education CME article, these investigators reviewed the literature and summarized the available cosmetic techniques for female external genitalia. Resection of the labia minora has been described

in several peer-reviewed reports. They also discussed the procedures and modifications to direct resection, wedge resection, and de-epithelialization of the labia minora. Aesthetic surgery of the clitoral hood may involve straight-line resection, extended wedge resection, or inverted V hoodoplasty. The mons pubis may be treated with mons pubis pexy, wedge resection, or lipo-modeling. The labia majora can be managed with direct resection or lipo-modeling, and hymenoplasty may be performed to correct a wide vaginal opening. Hunter and associates stated that aesthetic alteration of the genitalia is increasingly sought by women unhappy with the size, shape, and appearance of their vulva. Although the labia minora are usually the focus of concern, the entire anatomic region -- labia minora, labia majora, clitoral hood, perineum, and mons pubis -- should be evaluated in a pre-operative assessment of women seeking labiaplasty. Labiaplasty is associated with high patient satisfaction and low complication rates. These investigators discussed the 3 basic labia minora reduction techniques -- edge excision, wedge excision, and central de-epithelialization -- as well as their advantages and disadvantages to assist the surgeon in tailoring technique selection to individual genital anatomy and aesthetic desires. The authors presented key points of the pre-operative anatomic evaluation, technique selection, operative risks, peri-operative care, and potential complications for labia minora, labia majora, and clitoral hood alterations, based on a large operative experience. They stated that labiaplasty competency should be part of the skill set of all plastic surgeons. Wang and colleagues stated that liposuction alone is not always sufficient to correct the shape of the lower leg, and muscle reduction may be necessary. These researchers evaluated the outcomes of a new technique of selective neurectomy of the gastrocnemius muscle to correct calf hypertrophy. Follow-up data from these patients were analyzed retrospectively. Cosmetic results were evaluated independently by the surgeon, the patient, and a third party. Pre-operative and post-operative calf circumferences were compared. The Fugl-Meyer motor function assessment was evaluated 3 months after surgery. The average reduction in calf circumference was 3. The Fugl-Meyer scores were normal in all patients both before and 3 months after surgery. A normal calf shape was achieved in all patients; 6 patients complained of fatigue while walking and 4 of scar pigmentation, but in all cases, this resolved within 6 months. Calf asymmetry was observed in only 2 patients. The authors concluded that the findings of this case-series study suggested that neurectomy of the medial and lateral heads of the gastrocnemius muscle may be safe and effective for correcting the shape of the calves. Hundscheid and associates noted that patients suffering from body dysmorphic disorder BDD are preoccupied with a slight or imagined defect in appearance. First of all, to review the literature on the prevalence of BDD in cosmetic surgery and thereafter to review the literature on psychiatric co-morbidity and the outcome of surgical interventions. These investigators based their search strategy on Embase, Medline and PubMed, using the search terms "body dysmorphic disorder", "cosmetic surgery", "prevalence", "comorbidity" and "outcome". A study of the relevant articles enabled these investigators to access additional articles mentioned in these texts. The initial search strategy turned out to be too narrow. It was therefore broadened to include "body dysmorphic disorder", "cosmetic surgery", and "prevalence". Eventually these researchers included 23 original articles. In 11 of these the prevalence of BDD varied from 3. Only 2 studies reported on the outcome of cosmetic surgery performed on BDD patients; surgical interventions, however, seemed to result in new preoccupations with the prolongation of psychiatric co-morbidity. The authors concluded that BDD is a common psychiatric disorder that could sometimes lead to cosmetic surgery. Moreover, they stated that pre-operative screening of BDD patients is vital so that efficient psychiatric treatment can be initiated and patients are not subjected to surgical interventions that may be ineffective or even harmful. Bowyer and colleagues stated that a high proportion of individuals with BDD undergo cosmetic treatments in an attempt to "fix" perceived defect s in their physical appearance. Despite the frequency with which such procedures are sought, few studies have prospectively examined the outcomes of cosmetic procedures in individuals with BDD. These investigators reviewed the literature and discussed the current debate that exists on outcomes of cosmetic treatment for individuals with BDD. An emerging literature suggests the majority of individuals with BDD have poor outcomes after cosmetic interventions; however, based on the current literature, it cannot be fully ruled out that certain individuals with mild BDD and localized appearance concerns may benefit from these interventions. The authors noted that gaps in the current literature were highlighted, alongside recommendations for future

research. They stated that carefully conducted longitudinal studies with well-characterized patient populations are needed. Sweis and co-workers noted that BDD is an often under-recognized yet severe psychiatric illness. There is limited guidance for plastic surgeons in the U. Therefore, in collaboration with legal counsel, these investigators reminded their profession of the serious nature of patients with BDD, provided warning signs for recognizing BDD, and critically evaluated the validity of informed consent and the legal ramifications of operating on such patients in this country. These investigators performed a literature review to define the psychopathology of BDD and identify cases of patients with BDD who underwent cosmetic surgery resulting in potential threats to the surgeon. They also carried out an additional search of the legal literature in collaboration with legal counsel to identify key cases of patients with BDD attempting litigation following cosmetic surgery procedures. The diagnostic criteria and psychopathology of BDD were presented. Warning signs were highlighted to alert the plastic surgeon to patients at high risk for BDD. Strategies for legal protection include a pre-procedure check-list for patients who were suspected of having a BDD diagnosis. The authors concluded that BDD is prevalent in the cosmetic surgery population. Patients with BDD often have a poor outcome following aesthetic surgery, which can result in a dangerous or even deadly situation for the surgeon. The authors aimed to remind aesthetic plastic surgeons of the psychopathology, severity, and specific risks associated with operating on patients with BDD while suggesting specific protective strategies. Surgical Removal of Silicone Levy and Emer stated that various modalities including systemic and intralesional corticosteroids, minocycline, anti-tumor necrosis factor antibodies or surgical removal can be employed to treat silicone granuloma formation. The authors stated that surgical excision may be employed, but silicone is a permanent filler and is known to migrate to other areas of the body, making complete removal of the injected material impossible. They noted that this may lead to even more disfigurement, making it an unlikely treatment option particularly for facial granulomas. The authors noted that the treatment of silicone granulomas can be challenging, and a number of modalities have been implemented with varying degrees of success. Surgical excision was attempted in three reported cases. Two of the three resulted in complete resolution. The granulomas involved in both of these cases were well-circumscribed nodular lesions.

## Chapter 6 : algorithm - What exactly does augmentation mean in computer science? - Stack Overflow

*'The augmentation of the tourist facilities at Neyyar Dam has attracted many to the tourist spot located a little off the city.'*
*'Other measures focus on early detection of cancers, augmentation of treatment facilities and establishment of equitable pain control and a palliative care network.'.*

NMEA is the satellite number sent by some receivers when outputting satellite information. The two types of correction messages received fast and slow are used in different ways. The GPS receiver can immediately apply the fast type of correction data, which includes the corrected satellite position and clock data, and determines its current location using normal GPS calculations. Once an approximate position fix is obtained the receiver begins to use the slow corrections to improve its accuracy. Among the slow correction data is the ionospheric delay. As the GPS signal travels from the satellite to the receiver, it passes through the ionosphere. The receiver calculates the location where the signal pierced the ionosphere and, if it has received an ionospheric delay value for that location, corrects for the error the ionosphere created. While the slow data can be updated every minute if necessary, ephemeris errors and ionosphere errors do not change this frequently, so they are only updated every two minutes and are considered valid for up to six minutes. Please help improve this article by adding citations to reliable sources. Unsourced material may be challenged and removed. A precision approach includes altitude information and provides course guidance, distance from the runway, and elevation information at all points along the approach, usually down to lower altitudes and weather minimums than non-precision approaches. National Airspace System NAS did not have the ability to provide lateral and vertical navigation for precision approaches for all users at all locations. The traditional system for precision approaches is the instrument landing system ILS , which used a series of radio transmitters each broadcasting a single signal to the aircraft. This complex series of radios needs to be installed at every runway end, some offsite, along a line extended from the runway centerline, making the implementation of a precision approach both difficult and very expensive. The ILS system is composed of different transmitting antennas at each point built. The newer system is free of huge antenna systems at each airport. The entire MLS system for a particular approach was isolated in one or two boxes located beside the runway, dramatically reducing the cost of implementation. MLS also offered a number of practical advantages that eased traffic considerations, both for aircraft and radio channels. Unfortunately, MLS would also require every airport and aircraft to upgrade their equipment. Deploying an aircraft navigation system based on GPS was largely a problem of developing new techniques and standards, as opposed to new equipment. This left the problem of approaches, however. This inaccuracy in GPS is mostly due to large "billows" in the ionosphere , which slow the radio signal from the satellites by a random amount. Since GPS relies on timing the signals to measure distances, this slowing of the signal makes the satellite appear farther away. The billows move slowly, and can be characterized using a variety of methods from the ground, or by examining the GPS signals themselves. By broadcasting this information to GPS receivers every minute or so, this source of error can be significantly reduced. This led to the concept of Differential GPS , which used separate radio systems to broadcast the correction signal to receivers. Aircraft could then install a receiver which would be plugged into the GPS unit, the signal being broadcast on a variety of frequencies for different users FM radio for cars, longwave for ships, etc. Broadcasters of the required power generally cluster around larger cities, making such DGPS systems less useful for wide-area navigation. Additionally, most radio signals are either line-of-sight, or can be distorted by the ground, which made DGPS difficult to use as a precision approach system or when flying low for other reasons. The FAA considered systems that could allow the same correction signals to be broadcast over a much wider area, such as from a satellite, leading directly to WAAS. Since a GPS unit already consists of a satellite receiver, it made much more sense to send out the correction signals on the same frequencies used by GPS units, than to use an entirely separate system and thereby double the probability of failure. In addition to lowering implementation costs by "piggybacking" on a planned satellite launch, this also allowed the signal to be broadcast from geostationary orbit , which meant a small number of satellites could cover all of North America. Since then they have designed many approved WAAS helicopter approaches for various EMS

hospitals and air providers, within the United States as well as in other countries and continents.

## Chapter 7 : Induction or Augmentation of Labor and Autism | JAMA Pediatrics | JAMA Network

*augmentation of G. When our base graph is equal to the empty graph on n vertices this problem is in fact the network synthesis problem. The purpose of this paper is to demonstrate that, for the general network.*

Data Augmentation Since deep networks need to be trained on a huge number of training images to achieve satisfactory performance, if the original image data set contains limited training images, it is better to do data augmentation to boost the performance. Also, data augmentation becomes the thing must to do when training a deep network. There are many ways to do data augmentation, such as the popular horizontally flipping, random crops and color jittering. Moreover, you could try combinations of multiple different processing, e. In addition, you can try to raise saturation and value S and V components of the HSV color space of all pixels to a power between 0. Also, you could add a value between [ And then, for each training image, just add the following quantity to each RGB image pixel i. In this section, we will introduce several approaches for pre-processing. The first and simple pre-processing approach is zero-center the data, and then normalize them, which is presented as two lines Python codes as follows: Another form of this pre-processing normalizes each dimension so that the min and max along the dimension is -1 and 1 respectively. It only makes sense to apply this pre-processing if you have a reason to believe that different input features have different scales or units , but they should be of approximately equal importance to the learning algorithm. In case of images, the relative scales of pixels are already approximately equal and in range from 0 to , so it is not strictly necessary to perform this additional pre-processing step. Another pre-processing approach similar to the first one is PCA Whitening. In this process, the data is first centered as described above. Then, you can compute the covariance matrix that tells us about the correlation structure in the data: One weakness of this transformation is that it can greatly exaggerate the noise in the data, since it stretches all dimensions including the irrelevant dimensions of tiny variance that are mostly noise to be of equal size in the input. This can in practice be mitigated by stronger smoothing i. Please note that, we describe these pre-processing here just for completeness. In practice, these transformations are not used with Convolutional Neural Networks. However, it is also very important to zero-center the data, and it is common to see normalization of every pixel as well.

## Chapter 8 : Image Augmentation for Deep Learning using Keras and Histogram Equalization

*Stack Exchange network consists of Q&A communities including Stack Overflow, the largest, most trusted online community for developers to learn, share their knowledge, and build their careers.*

## Chapter 9 : Must Know Tips for Deep Learning Neural Networks

*Histogram Equalization is the process taking a low contrast image and increasing the contrast between the image's relative highs and lows in order to bring out subtle differences in shade and create a higher contrast image.*